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HARPOON
Designer's Series II:
Post Graduate Naval Operations and Tactics

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Introduction

Harpoon Designer's Series II is a departure from the first HDS. From the outset our intent was to produce a new set of Scenarios that were more intense and less tedious. We were also interested in showcasing the stronger aspects of the Harpoon System. It should thus come as no surprise that we fashioned smaller scenarios, and that many of them feature submarines to a greater or lesser extent. The Scenarios included here also emphasize some of the harsh and painful lessons of modern Naval Tactics and Operations. These case studies vary from single warfare area refreshers to combined arms trials.

The Team
The HDS-II Team is a gang of Five. Three of the five Scenario Designer's are veterans of HDS-I; B. I. Hutchison, Cass Johnson, and Cobalt Shiva. The two recent additions to the team are Mark Lam and Delwin Hinkle. Delwin also provided some critical data base translation assistance and a lot of supporting text on Aerial Warfare.

The Tactical Guide
There has also been a demand for a tactical guide, and the bulk of this manual is just that. There are extensive sections on Group Formations and Defenses, Base Defenses, Strike Warfare, and Air Warfare. Also provided are peeks inside the system, as well as tips for how to play both the game and the system to your advantage.

The Data Base
The Harpoon Data Base is here! Provided as a series of text files on the distribution disks are the complete Ship, Submarine, Aircraft, Base, Sensor, and Weapons data bases from Harpoon. There is a lot of stuff here. There are over 300 ship classes, over 100 submarine and aircraft classes, and over 2,000 bases. We have provided this data as text files so that you can manipulate (sort, edit, and print) it at your leisure, without having to wade through several hundred pages of printed material.

This Data Base is the fruit of over four years of research, data entry, and revision on the parts of Larry Bond, Mike Steele, and Darrel Dearing.

The Scenario and Designer's Notes
Cobalt Shiva provided his Scenario and Design notes as an add on to his on-line orders, as befits that phantom of the ether. The rest of the teams notes are included here, for your edification and enjoyment.

Glossary of Terms
Not every Harpooner has the encyclopedic knowledge of Naval Warfare the Designer's have, so we have also included a Glossary of Terms as the final item in this document.

Fair Winds and Following Seas

Rodney G. Graves
Project Manager

Fundamentals

Modern Naval Warfare has followed the ancient naval tradition of shrouding its secrets in an obscure vernacular that effectively closes the subject to those not inducted into the brotherhood. The average person would never interpret "Now haul over all hatch hoods and gun covers" as a warning that it was raining. Nor would the majority understand that a "Bravo Zulu" is a hearty "Well Done." While the Harpoon devotee does not need this level of understanding and vernacular to successfully trounce the enemy, he or she does need to understand some of the less obvious aspects of Naval Warfare.

This manual can not hope to relate all the nuances of Naval Jargon, thinking, and Tactics. It can and will introduce and explain the fundamentals of these subjects and allow the reader to better understand the thinking of the professionals who ply the seas in the interests of their respective nations.

1.00 SENSORS AND COMMUNICATIONS

Warfare in the "Information Age" has become dependent upon the gathering, collation, processing, and dissemination of information. Now, more than ever before in the history of warfare, what you don't know may very well kill you. The vast expanses of the ocean are particularly well suited to strategic hide and seek, for while there is no place to hide, there is vast room for maneuver.

The student of Naval Warfare must first be a student of the technologies that define the world of modern tactics. The astute student will discover that for every technology, there eventually develops a counter technology, and that all sensors and forms of communication have advantages and disadvantages.

1.01 Visual Detection: The earliest sensor in Naval Warfare remains a crucial asset centuries later. The human eye is still responsible for a great many detections, and remains one of the very few means of positive identification. Visual detection is limited to the line of sight (which is in turn limited by the curvature of the earth, the height of the observer, and the height of the object to be observed), and is greatly impacted by the amount of light available, precipitation, clouds, and haze. A well trained lookout under ideal situations can detect a very large object (such as an Aircraft Carrier) at a range of about 14 to 16 Nautical Miles. In heavy rain or fog, the same lookout might not see the same Aircraft Carrier until it was a mile away or less. And a darkened ship on a clear but moonless night might not be detected until within three to five Nautical Miles.

Advantages: No emissions subject to counter detection. Yields some fairly reliable information on contact identity.
Disadvantages: Detected targets are probably close enough to attack effectively.

1.02 RADAR: RAdio Detection And Ranging devices work on the principle of radiating an electromagnetic signal, which will be reflected by solid objects in the path of transmission. The reflection of this signal is detected by a receiver, and the range is determined by the delay between signal transmission and echo reception. Radars have become very specialized by purpose and nature of the host platform. The major varieties are Air Search (AS), Surface Search (SS), Three Dimensional (3D) [or Height Finding], Missile Fire Control (MFC), Gun Fire Control (GFC).
Advantages: Provides accurate bearing and range information, target course and speed may be derived. Immune to the effects of darkness, and minimally effected by environmental factors
Disadvantages: Limited to line of sight detection and tracking. Transmitted signal is detectable at two to four times the maximum range at which a target can be detected, and may reveal the nationality and platform type of the radiating platform. Provides NO information as to contact identity (unless used in conjunction with IFF).

1.03 IFF: Identification, Friend or Foe, is an adjunct to RADAR. An encoded challenge is sent along with a radar pulse. A transponder in the platform being detected by the radar responds to the challenge. Responses break down into VALID=Known Friend, INVALID=Unknown, NO RESPONSE=Unknown.
Advantages: Provides Positive Identification of friendly units provided their transponder is functional and they have the correct code.
Disadvantages: Same as radar. Note that warplanes can imitate civil aviation IFF modes and codes, but civil aviation can not use secure modes and codes. Best information available is whatever the platform being detected wants you to know. (results: Friendly or Unknown).

1.04 ESM: Electronic Support Measures is the term used for equipment and methods used to detect the active emissions of radar and IFF (and to a lesser extent communications). The locational information on the source of the radiations is limited to bearing (direction) only.
Advantages: Creates no emissions subject to counter detection, and may yield clues as to contact identity. Manipulation of the bearing only information (via Target Motion Analysis (TMA)) can yield a solution of fire control quality for target position, course, and speed.
Disadvantages: Triangulation requires communication between platforms which may be subject to intercept, and TMA is time consuming (at least 12 minutes for a solution under ideal conditions).

1.05 Active SONAR: SOund NAvigation and Ranging, the underwater equivalent of RADAR. A Sound signal is radiated, and echoes reveal the location of contacts. Provides good range and bearing information, but no information on identity
Advantages: Quickly provides positional information of fire control quality.

Disadvantages: As with RADAR, the sound transmission is easily intercepted well beyond the maximum range of a return echo. Sonar is also extremely sensitive to the local sound environment.

1.06 Passive SONAR: Similar to ESM. Provides bearing only positional information which can be manipulated via triangulation or TMA to yield a track of fire control quality. Passive Sonar also reveals some information as to the identity of the detected platform.
Advantages: Creates no emissions subject to counter detection, and may yield clues as to contact identity. Manipulation of the bearing only information (TMA) can yield a solution of fire control quality for target position, course, and speed.
Disadvantages: Triangulation requires communication between platforms which may be subject to intercept, and TMA is time consuming (at least 12 minutes for a solution under ideal conditions).

1.07 Infrared Systems: Systems which take advantage of infrared emissions of an object which is hotter than the surrounding environment.
Advantages: Creates no emissions subject to counter detection, and may yield clues as to contact identity.
Disadvantages: Limited to line of sight detections. Detected targets are probably close enough to attack effectively. Accurate range data achieved only with difficulty.

1.08 Electro Optical Systems: These technological extensions of the human eye allow detections at greater range than the Mark One Mod Zero eyeball and the eyeball binocular combination. But just like standard visual detection, Electro Optical systems are still subject to the limitations of fog, haze, and precipitation. Electro Optical devices are also subject to line of sight limitations, though low light conditions are less of a problem.
Advantages: No emissions subject to counter detection. Yields some fairly reliable information on contact identity.
Disadvantages: Detected targets are probably close enough to attack the detecting unit effectively if they gain counter detection.

1.09 Visual Communications:

a) Flag Hoist: Signal Flags are a secure means of communication in that an enemy must be well within visual range to read the signal, and must have a copy of the code book to understand what is seen.
Advantages: Difficult to intercept and decipher, will not reveal the location of the formation.
Disadvantages: Severely limited range (2-4 NM), very slow data rate, useless in poor visibility and at night.

b) Flashing Light: The use of a specially adapted high intensity search light allows communication in Morse code between vessels within line of sight of each other. Such communications are usually encrypted, and may only be intercepted by a platform along the same line of sight.

Advantages: Difficult to intercept and decipher, will not reveal the location of the formation.
Disadvantages: Severely limited range (app. 12 NM), slow data rate, difficult to use in poor visibility.

1.10 UHF Radio and Data Link: Ultra High Frequency Radio transmissions are a line of sight phenomenon. The information signal can be encrypted or clear, and may be voice or data.
Advantages: Counter detection is limited to a range only slightly greater than line of sight. High data rate, relatively immune to environmental interference.
Disadvantages: Counter detection possible by reconnaissance satellite and other platforms on the edge of the visual horizon. (Omni-Directional transmission).

1.11 SHF Data Link: Super High Frequency Data Link transmissions are low power in a very tightly formed beam which does not follow the earth's curvature.
Advantages: Counter detection is limited to line of sight within a narrow beam width. Extremely low probability of intercept. High data rate, relatively immune to environmental interference.
Disadvantages: Expensive! Available on very few platforms.

1.12 (Marine) VHF Radio: Very High Frequency Radio waves tend to follow the earth's curvature and are very useful in communicating with vessels beyond the visual horizon but within roughly 200NM.
Advantages: Typically used only for voice communication, has excellent range and clarity. Relatively immune to environmental interference.
Disadvantages: Omnidirectional pattern and long range make for easy interception.

1.13 HF Radio and Datalink: High Frequency Radio waves tend to be reflected by the Ionosphere, which in turn allows very long range (intercontinental) communications.
Advantages: Useful for both Voice and Data Communications over a wide area of coverage with a relatively high rate of data transfer.
Disadvantages: Easily intercepted and triangulated from long distances, subject to major disruptions due to environmental factors.

2.00 Terminology

Before we begin to examine some responses to specific tactical situations, we need to define a few terms:

AEW: Airborne Early Warning aircraft. The 'Eye in the Sky' command, communication and control platform. If you have these, your task will be much easier. AEW platforms will be among your most valuable.

ASW: Anti Submarine Warfare. The process of detecting, localizing, tracking. and destroying Submarines. Aircraft are the preferred platforms for ASW since they are not at risk from the hunted submarine.

EW: Electronic Warfare. The art of turning a perfectly good radar display into a collection of electronic ghosts and miscellaneous clutter.
These platforms let your strikers hide behind a smoke screen of electrons.

ASuW: Anti Surface Warfare.
The process by which Surface Vessels are converted into Submarines...

AAW: Anti Air Warfare.
The art of converting aircraft into thinly scattered fields of debris.

AA: Air to Air. Aerial combat between fighter aircraft or between fighter and non fighter aircraft.

CAP: Combat Air Patrol. A group of fighter aircraft with AA loadouts. No specific position implied.

BARCAP: Barrier Combat Air Patrol.
CAP located between something you want to protect and the bad guys.

TARCAP: Target Combat Air Patrol. CAP located over a target (or potential target). The TARCAP's job is to interdict the other guy's BARCAP and/or CAP so that your strikers can put their ordinance on target.

PGM: Precision Guided Munitions. Stars of the Persian Gulf War. Expensive and limited in supply, most often used for targets where a "Miss is as good as a mile."

SEAD: Suppression of Enemy Air Defenses. The object is to keep the bad guys heads down (and therefore away from their weapons systems) so that your strikers can deliver their ordnance.

OPFOR: Opposing Forces
The bad guys.

Formations

The effective design and utilization of formations are essential elements of modern Naval Warfare. The formation selected will have enormous impact upon the defensive and offensive capabilities of a battle group, and will be a determining factor in mission success or failure.

A good formation will not ensure your success, but a bad one may well doom you to defeat, and there's more to it than making sure all the neat little spaces in the rings are filled. No one formation will fit all situations, and a formation will change over

the course of a transit or battle as the threat and remaining assets dictate.

The formations discussed here are primarily intended for major battlegroups, amphibious battlegroups, and large convoys, though most of the principles apply to smaller formations. The effective and intelligent design and implementation of formations is contingent upon the following elements:

1. Mission Review/Requirements
.01 What is your mission
.02 What are your time constraints
.03 What are your geographic constraints

2. Available Platforms
.01 Mission Essential Unit(s)
.02 Other units which require screening...
.03 AAW/ASMD "Shooters" (Surface to Air Missile Platforms)
    a) Long Shooters
    b) Medium Range Shooters
    c) Short Range Shooters
    d) Point defense/self defense only
.04 ASW Players
    a) Towed Array/CZ Capable
    b) Hull mounted active/passive (Non CZ)
    c) Short Range/Direct Path only/HF Sonar
    d) ASW Helo "Home Plate"
    e) ASW standoff weapons
.05 ASuW Players
    a) ESM ability
    b) Weapons Range
    c) Weapons Loadout
.06 AEW assets
    a) Effective Radar Range
    b) ESM ability
    c) Range/time on station
.07 CAP assets
    a) Weapons Range
    b) Weapons Loadout
    c) Effectiveness
    d) Range/time on station
.08 SuCAP assets
.09 Aerial Tanking Assets
.10 Maritime Patrol Assets

3. Threat Summary
.01 AAW/ASMD Threat
    a) Threat Axis or Axes
    b) Weapons Range
.02 ASW Threat

a) Path of Intended Motion (PIM)
b) Minimum Speed of Advance (SOA)
c) Weapons types/Ranges

.03 ASuW Threat
a) Threat Axis or Axes
b) Weapons Range

Some Tactical Maxims:
In designing a formation the following maxims also apply:

1. Don't give away your location without good reason. (The enemy can't hurt you if he can't find you.)
2. Actively attempt to locate and localize the enemy consistent with rule 1. (You can't hurt the enemy unless you can find him.)
3. Never fight fair. (The sucker punch is the best punch, especially when you're wearing brass knuckles.)
4. Don't be predictable.
5. Engage the launch platform, not the weapons fired from the platform. (Shoot the Archer, not the Arrow...)

1.0 Mission Review/Requirements

The first step is ALWAYS an understanding of the Mission or Goal of the operation. If you accomplish the Mission, it is reasonably certain that you will satisfy the Victory Conditions and "Win." If, on the other hand, you do not accomplish the Mission, there is an even greater certainty that you will not satisfy your Victory Conditions.

1.01 What is your Mission?: The name of the game is to accomplish the mission. Survival and mission accomplishment may be incompatible. By the same token, you could destroy all the forces the enemy sends against you and still lose if you don't accomplish your mission. The mission orders must be carefully reviewed and thoroughly understood. The nature of the mission will determine the mission essential unit(s), and the units required to screen them.

1.02 What are your time constraints?: Sometimes you will have a deadline, in the very literal sense of the word. Prudence and time constraints will often conflict, at which point you must start making compromises. You'll never win if you don't show up on time.

1.03 What are your geographical constraints?: Most people think of the oceans as flat featureless expanses. To all appearances this is true, but the submerged topography and surrounding land masses will have a great effect upon naval operations. It's very hard on both ships and submarines if they run aground, likewise shallow water is easier to mine than deep water. Diesel Electric boats prefer shallow littoral waters and choke points, while SSN's prefer deep water and open ocean. Look at the geography from the perspective of the enemy, and plan a

defense for him. This will usually be a fairly good indication of where you will find him waiting for you.

2.0 Available Platforms

2.01 The obvious place to start when setting up a formation is to examine the platforms available. There are several facets to this first step. A quick review of the mission is vital, as this will reveal the platforms essential to the accomplishment of the mission (the Mission Essential Unit(s)). These are the units that have the unique capabilities to accomplish the assigned mission. If these vessels are lost, the mission can not be accomplished.

Once upon a time the "Mission Essential" unit was known as the "High Value Unit." By implication, all other units were expendable. There was thus a tendency for the assorted ship drivers to consider their unit the "High Value Unit." Sometimes it's not what you say, but how you say it...

2.02 This review will also reveal some ships which are not really capable of defending themselves. In an invasion force, the Amphibious ships are both mission essential and (for the most part) incapable of defending themselves. Other examples of ships incapable of effective self defense are the ships in the logistics tail (Oilers, Ammo ships, and other auxiliaries) and merchant ships. Unless specified as essential in the Victory Conditions of a Scenario, most players view such ships as clutter.

In the real world, they are vital. You can't continue the fight once you've run out of beans, bullets, and gas. Modern warfare requires copious amounts of all three!

MISSION ESSENTIAL UNITS AND THOSE THAT REQUIRE SCREENING ARE TYPICALLY PLACED IN THE CENTER (MAIN BODY) OF A FORMATION.

This is not a hard and fast rule. To an intelligent opponent, this telegraphs too much information regarding where to find the mission essential unit(s). You could liken it to drawing a bullseye...

In addition, a unit (or units) with a good AAW weapons suite may be placed in the main body as a last ditch SAM defense against incoming aircraft and missiles. This combatant is usually not the best AAW platform in the formation, but may be the most effective AAW platform in a formation without long shooters.

In a carrier battle group (CVBG), there is typically one ship that earns its living by following in the wake of the carrier. This station is known as plane guard, and it exists to recover aviators and others unfortunate enough to fall overboard from the carrier. (If the person or persons in the water had to wait for the carrier to come about and recover them, they could be in for a very long wait indeed.) The plane

guard station may be filled by a Helicopter, but an AAW capable ship is a better choice.

THE SIZE OF THE MAIN BODY WILL BE DETERMINED BY THE NUMBER OF SHIPS LOCATED WITHIN IT, AND THE DESIRED MINIMUM SEPARATION BETWEEN THE MAIN BODY AND THE AAW RING.

If I'm escorting a carrier or a body of large combatants, I like to set the Main Body ring at 10NM, though this would vary with EMCON condition and visibility. It's always nice to be able to communicate via flashing light vice radio, especially when you consider it's almost impossible to intercept flashing light. Also keep in mind that the specter of nuclear weapons may require a very large separation between vessels, and that it is a good idea to keep ships separated by at least 2NM for safety reasons.

2.03 The next step in platform evaluation is to identify the AAW "Shooters," i.e., the ships which possess SAM capability. This SAM capability will make them key players in AAW and ASMD, but will not relegate them all to the AAW ring provided. These ships will further break down into the following sub categories:

a) Long Shooters: Ship's with an AAW missile range in excess of 60NM. The longer the range and the greater the number of engageable tracks, the better.

Ships that fit the bill:
US; *Arleigh Burke* DDG (SM-2(MR)IV), *Bainbridge* CGN (NTU SM-2(ER)II) *Belknap* CG (NTU SM-2(ER)II), *Leahy* CG (NTU SM-2(ER)II), *Long Beach* CGN (SM-2(ER)), *Truxton* CGN (SM-2(ER))

Long Shooters should usually be assigned a station further out along the AAW or ASMD threat axis, ideally far enough out to engage incoming threat aircraft before they can engage the Mission Essential Unit. If you don't give them adequate support, however, they will fall victim to the first serious raid.

b) Medium Range Shooters: Ships with an AAW missile range of between 20NM and 60NM, a good air search suite, and multiple track capability. These ships possess the minimum capabilities to be considered an area AAW platform.

Ships that fit the bill:
CANADA; *Iroquois* (SM-2(MR)II)
FRANCE; *Colbert* CG (MASCURA), *Suffren* DDG (MASCURA)
ITALY; *Andrea Doria* CG (SM-1(ER)), *Animoso* DDG (SM-2(MR)) *Vittorio Veneto* CG (SM-1(ER))
UK; *Bristol* DDG (Sea Dart), Type 42 DDG (Sea Dart), *Type 42/3* DDG (Sea Dart)
US; *California* CGN (NTU, SM-2(MR)II), *Kidd* DDG (NTU SM-2(MR)II), *Ticonderoga* (BLK-0, I, & VLS) CG's (SM-2(MR)IV), *Virginia* CGN (NTU SM-2(MR))
USSR/CIS; *Azov* CG (SA-N-6, SA-N-3B), *Frunze* BCGN (SA-N-6), *Kalinin*

BCGN (SA-N-6), *Kara* CG (SA-N-3B), *Kiev* CVHG (SA-N-3B) *Kirov* BCGN (SA-N-6), *Slava* CG (SA-N-6)

The majority of the Medium range shooters will usually be assigned to the AAW ring along the axes where AAW or ASMD threats are expected. Some of them may end up pulling double duty in the ASW ring along the threat axes due to their ASW abilities in addition to their AAW abilities.

But remember, a worthy enemy will usually show up where you least expect him.

c) Short Range Shooters: Ships with an AAW missile range of 10NM to 20NM, limited air search suite, and single or few track capability. These ships are not really useful for area defense, but may provide vital local defense and have greater capabilities than mere point or self defense.

Ships that fit the bill:
US; *Charles F. Adams* DDG (SM-1(MR)), *Oliver Hazard Perry* FFG (SM-1(MR))
USSR/CIS; *Kanin* DDG (SA-N-1), *Kashin* DDG (SA-N-1), *Mod Kashin* DDG (SA-N-1), *Kresta* I CG (SA-N-1), *Kresta II* CG (SA-N-3A), *Moskva* CVHG (SA-N-3A), *Provornyy* DDG (SA-N-7), *Sam Kotlin* DDG (SA-N-1), *Sovremennyy* DDG (SA-N-7)

d) Point Defense/Self Defense: Ships with an AAW missile or gunnery range of less than 10NM. These platforms do not contribute to the AAW/ASMD defense of the battlegroup, and may require screening themselves.

Ships that fit the bill:
ALGERIA; *Koni* FF (SA-N-4)
BANGLADESH; *Type 61* FF (SEA CAT)
BELGIUM; *Weilingen* FF (RIM-7M)
BULGARIA; *Shersen* PTH (SA-N-4)
DENMARK; *Niels Juel* FF (RIM-7M)
EGYPT; *Descubierta* FF (RIM-7M)
FRANCE; *Cassard* DDG (SM-1(MR)), *Charles deGaulle* CVN (ASTER 15, MISTRAL), *Clemenceau* CV (CROATALE), *La Fayette* FF (CROATALE EDIR, MISTRAL), *Floreal* FF (MISTRAL), *Georges Leygues* DDG (CROATALE), *Tourville* DD (CROATALE)
FRG; *Lutjens* (SM-1(MR)), *Bremen* FFG (RIM-7B)
ITALY; *Audace* DDG (SM-1(MR)), *Impavido* DDG (SM-1(MR)), *GuiseppeGaribaldi* CV (ASPIDE), *Lupo* FFG (ASPIDE), *Maestrale* FFG (ASPIDE), *Minerva* FFL (ASPIDE)
MOROCCO; *Descubierta* FF (ALBATROS)
NETHERLANDS; *Karel Doorman* FF (RIM-7M), *Jocob Van Heemskerck* FFG (SM-1(MR)), *Kortenaer* FF (RIM-7M), *Tromp* DDG (SM-1(MR) *Van Spejik* (SEA CAT)
NORWAY *Oslo* FF (RIM-7M)
PAKISTAN; *Brooke* FFG (SM-1(MR))
PORTUGAL; *Vasco da Gama* FF (RIM-7M)

SPAIN; *Descubierta* FF (ALBATROS)
UK; *Leander I* FF (SEA CAT), *Leander 2B* FF (SEA CAT), *Leander 2TA* FF (SEA CAT), *Leander 3A* FF (SEA WOLF), *Leander 3B* FF (SEA CAT), *Type 22/1* FF (SEA CAT), *Type 22/2* FF (SEA WOLF), *Type 22/3* FF (SEA WOLF), *Type 23* FF (SEA WOLF)
US; *Blue Ridge* LCC (RIM-7M), *Enterprise* CVN (RIM-7M), *Forrestal* CV (RIM-7M), *Improved Spruance* DD (RIM-7M), *Iwo Jima* LPH (RIM-7M), *Kennedy* CV (RIM-7M), *Kitty Hawk* CV (RIM-7M), *Nimitz* CVN (RIM-7M), *Sacramento* AOE (RIM-7M), *Spruance* DD (RIM-7M), *Supply* AOE (RIM-7M), *Tarawa* LHA (RIM-7M), *Wasp* LHD (RIM-7M), *Wichita* AOR (RIM-7M)
USSR/CIS; *Admiral Gorshkov* CVHG (SA-N-9), *Baku* CVHG (SA-N-9), *Berezina* AFS (SA-N-4), *Grisha I* FFL (SA-N-4), *Grisha III* FFL (SA-N-4), *Grisha V* FFL (SA-N-4), *Ivan Rogov* LPD (SA-N-4), *Koni* FFL (SA-N-4), *Krivak I* FFG (SA-N-4), *Krivak II* FFG (SA-N-4), *Krivak III* FFG (SA-N-4), *Nanuchka I* FFL (SA-N-4), *Nanuchka III* FFL (SA-N-4), *Natya I* ML (SA-N-8), *Okean* AGI (SA-N-5/8), *Pauk* PC (SA-N-5/8), *Polnochny* LST (SA-N-5/8), *Ropucha* LST (SA-N-5), *Sarancha* PHM (SA-N-4), *Sverdlov* CC (SA-N-4), *Tarantul I* FFL (SA-N-4), *Tarantul II* FFL (SA-N-4), *Tarantul III* FFL (SA-N-4), *Udaloy* DDG (SA-N-9)

2.04 The next step in the evaluation process is to evaluate the ASW capabilities of the assigned ships. Systems and capabilities vary widely from nation to nation and class to class. The best way to break them out is by the following capabilities:

a) Towed Array/CZ Capable: Platforms possessing a tactical towed array sonar or another reliable sonar capable of convergence zone detection and tracking. These are your primary ASW detection platforms. They should be placed in the front (relative to PIM) and front flanks of a formation where submarines will attempt to drift or creep into attack position. Ideally your ASW Platforms will be located in the first CZ out from the main body (app. 30NM to 40NM).

Trolling for submarines is boring business! The key here is to detect the bad guys as far away from the main body as possible, and then prosecute the contact with ASW helicopters or fixed wing aircraft. Try to avoid prosecuting submarines with surface ships, such prosecutions are dangerous and thus should only be used as a last ditch or urgent attack.

Ships that fit the bill:
CANADA; *Annapolis* FF (SQR-501 CANTASS), *Halifax* FFH (SQR-501 CANTASS), *Iroquois* DD (SQR-501 CANTASS)
FRANCE; *La Fayette* FF (DSBV 61 FLUTE)
NETHERLANDS; *Karel Doorman* FF (DSBV 61 FLUTE), *Van Speijk* FF (SQR-18)
PAKISTAN; *Brooke* FFG (SQS-26), *Garcia* FF (SQS-26)
PORTUGAL; *Vasco da Gama* FF (SQS-510)
SPAIN; *Santa Maria* FFG (SQR-19)
UK; *Invincible* CVH (TYPE 2016), *Leander 2TA* FF (TYPE 2031), *Leander 3A* FF (TYPE 2016), *Type 22/1* FF (TYPE 2016), *Type 22/2* FF (TYPE 2016, 2031), *Type 22/3* FF (TYPE 2050, 2031), *Type 23* FF (TYPE 2050, 2031), *Type 42/2* DDG

(TYPE 2016)
US; *Arleigh Burke* DDG (SQS-53, SQR-19), *Belknap* CG (SQS-26), *California* CGN (SQS-26), *Improved Spruance* DD (SQS-53, SQR-19), *Kidd* DDG (SQS-53), *Knox* FF (SQS-26, SQR-18), *O.H. Perry* FFG (SQR-19), *Spruance* DD (SQS-53, SQR-19), *Ticonderoga* BLK-0 (SQS-53) CG, *Ticonderoga* BLK-1 (SQS-53, SQR-19) CG, *Ticonderoga* SWP (SQS-53, SQR-19) CG, *Truxton* CGN (SQS-26), *Virginia* CGN (SQS-53)

b) Hull mounted active/passive sonar without CZ detection capability: These platforms are your inner ASW zone combatants, and should usually be placed on the flanks or rear of a formation (relative to PIM) where approaching submarines will be forced to move at higher speeds, thus making more noise. They are also useful when paired with a less than capable ASW ship on a picket station.

Ships that fit the bill:
ALGERIA; *Koni* FFL (BULL NOSE)
BANGLADESH; *Type 41* FF (TYPE 162), *Type 61* FF (TYPE 174, TYPE 170)
BELGIUM; *Weilingen* FF (CAN SQS-505)
BULGARIA; *Riga* FF (Hercules, Rat Tail)
CANADA; *City* FFH (SQS-501, 503, 504), *Mackenzie* FF (SQS-505), *Mod Resticouche* FF (SQS-501, 503, 505), *St.Laurent* (SQS-501)
DENMARK; *Nils Juel* FF (UK. PMS-26)
EGYPT; *Descubierta* FF (DE 1160B/1167), *Jianghu* FF (DEGAS)
FRANCE; *Aconit* DD (DUBV 23/43), *Balny* FF (SQS-17), *Cassard* DDG (DUBA 25 TARPON), *Clemenceau* CV (SQS-503), *Georges Leygues* DDG (DUBV 23/43), *Jeanne D'Arc* CVH (DUBV 24), *Suffren* DDG (DUBV 32/43), *Tourville* DD (DUBV 23/43)
FRG; *Bremen* FFG (DSQS-21B), *Hamburg* DDG (ELAC 1BV), *Koln* FF (EDO-610), *Lutjens* DDG (DSQS-21B), *Thetis* FFL (ELAC 1BV)
GDR; *Bal Com* 10 FF (BULL NOSE/MARE TAIL), *Koni* FFL (BULL NOSE)
ITALY; *Alpino* FF (DE1164 HULL & VDS), *Andrea Doria* CG (SQS-23), *Animoso* FF (DE1164 HULL & VDS), *Audace* DDG (EDO-610), *Guiseppe Garibaldi* CVH (DE1164 HULL & VDS), *Impavido* DDG (SQS-39), *Lupo* FFG (DE1160B), *Maestrale* FFG (DE1164B/DE1164 VDS), *Minerva* FFL (DE1167LF), *Principe de Cristofaro* FFL (SQS-36 HULL & VDS), *Vittorio Veneto* CHG (SQS-23)
LIBYA; *Assad* FFL (DIODON), *Dat Aswari* FF (DIODON), *El Hani* FF (BULL HORN)
MALAYSIA; *Type 41/61* FF (TYPE 162)
MOROCCO; *Descubierta* FF (DE1160B/1167)
NETHERLANDS; *Kortenaer* FF (CAN SQS-505), *Tromp* FF (TYPE 162/EDO-610)
NORWAY; *Nordkapp* OPV (SIMRAD SS-105), *Oslo* FF (SQS-36)
PAKISTAN; *County* DD (TYPE 162/184), *Fram I* DD (SQS-23), *Leander* FF (TYPE 162/184)
PORTUGAL; *Commandante Riviere* FF (SQS-17), *Andrade* FF (DIODON), *Jao Coutino* FF (QCU-2)
SPAIN; *Baleares* FF (DE1160LF, SQS-35 IVDS), *Descubierta* FF (DE1160B/DE1167 VDS), *Fram* I DD (SQS-29/23)

SWEDEN; *Goteborg* FFL (SIMRAD SS304, SALMON VDS), *Hugin* PTM (SIMRAD SQ3D/SF), *Stockholm* FFL (SIMRAD SS304, SALMON VDS)
UK; *Type 21* FF (TYPE 184), *Type 42/1* FF (TYPE 184,162), *Type 42/2* FF (TYPE 184, 162)
US; *Bainbridge* CGN (SQS-23), *Leahy* CG (SQS-23), *Long Beach* CGN (SQS-23)
USSR/CIS; *Azov* CG (BULL NOSE/MARE TAIL), *Berezina* AFS (BULL HORN), *Grisha I* FFL (BULL HORN, ELK TAIL),*Grisha II* FFL (BULL HORN, ELK TAIL), *Grisha III* FFL (BULL HORN, ELK TAIL), *Grisha V* FFL (BULL HORN, ELK TAIL), *Kara* CG (BULL NOSE, MARE TAIL), *Kashin* DDG (HERCULES), *Kresta I* CG (HERCULES), *Kresta II* CG (BULL NOSE), *Krivak I* FFG (BULL NOSE, MARE TAIL), *Krivak II* FFG (BULL NOSE, MARE TAIL), *Krivak III* FFG (BULL NOSE, MARE TAIL), *Mod Kashin* DDG (BULL NOSE, STEER HIDE), *Mod Petya I* FFL (HERCULES, MARE TAIL), *Provornyy* DDG (BULL HORN), *Slava* CG (BULL NOSE, MARE TAIL), *Sovermennyy* DDG (BULL HORN, STEER HIDE)

c) Short Range/Direct Path only or HF Sonar: These ships are effectively blind against most submarines. The platform will probably not detect the hostile submarine until it is well within weapons range of the submarine. These ships really require screening themselves, but may provide a final barrier between a hostile sub and the mission essential unit.

d) Helo Home Plate: A ship which is the normal launch/recovery platform for a helicopter is known as "Home Plate." The Helo is your offensive ASW weapon of choice in a ship formation. They can get there fast, they are not at risk, and a combination of dippers and pouncers are a submariner's nightmare. Keep careful track of where the various platforms with Helo's on board are located in your formation.

Submariners really hate ASW Helo's, particularly a pair of dippers with a friend along to drop ordnance. They can neither run nor hide effectively, and at the very least must break off that approach.

e) ASW Standoff Weapons: If the bad guy gets close enough for you to use these, you've lost the first half of the battle and you are now reacting instead of forcing the enemy to react. They're still better than an over the side shot, so use them when you can, and try to keep a couple of ships with these weapons near the Mission Essential unit(s).

*Remember, in **A**wfully **S**low **W**arfare, the greatest threat from submarines is along the **P**ath of **I**ntended **M**otion. Submariners like to lie doggo and let the formation run over their heads, at which time they let loose with everything they can, and hope to escape in the ensuing confusion.*

2.05 The next area of consideration is Anti Surface Warfare. ASuW is mentioned last here as it will usually be the least of your worries. Almost all ships have at least a passable ASuW capability, but these capabilities may be broken down as earlier warfare areas were.

a) ESM Ability: In conjunction with tactical maxims 1 and 2, Electronic Support Measures is one of the best means of detecting, localizing, and acquiring a fire control solution against hostile surface units. Thus ships with top notch ESM and SIGINT abilities are vital eyes to the formation in ASuW. *This assumes that you lack off platform detection assets (such as helos or other aircraft).*

As an interesting side note, passive sonar works better against most surface combatants than it does against the latest generation of very quiet nuclear and diesel electric attack submarines. Your key ASW players may thus become your key ASuW players if your off platform (read Aerial) assets are limited, and your enemy is not obliging when it comes to ESM and SIGINT.

b) Weapons Range: More is better! The idea is to engage the enemy either beyond his maximum engagement range, or surprise him. The break out is usually along the lines of greater than 100NM, 40NM to 100NM, and less than 40NM.

c) Weapons Loadout: Again, more is better. *Kirov* and *Slava* immediately come to mind, as do the *Iowa* class BB's.

2.06 AEW Assets. The marriage of the Aircraft and Radar has yielded a remarkably useful child, the Airborne Early Warning system. Since Radar is a line of sight phenomenon, an airborne radar allows for a greatly increased line of sight, and an even greater increase in the area of coverage. It also allows you to use an active radar from a position that is along the axis you expect the enemy to approach from, and locate that emitter away from the formation, which helps conceal your actual location. The factors to be considered when evaluating the effectiveness of your AEW assets are the following:

a) Effective Radar Range (as a function of target size): Obviously, the greater the radar range the better, but capability against very small (radar cross section) targets is also important. Detection ranges against very small very low targets should be the criteria for radar coverage and overlap in most cases.

Communications and link capability are also very important in the real world. If your AEW platform can act as a UHF link and communications relay, you greatly reduce the probability of the enemy passively detecting the formation.

b) ESM ability: If your AEW assets have a top notch ESM suite and the enemy does not have a good indication of your location, then you may benefit from radar silence or intermittent use. If the bad guys have to search an entire ocean and you are not radiating, they will have to radiate, which should yield first detection to you.

c) Range/Time on station: The further out along a threat axis the AEW platform can go, and the longer they can stay there, the better. The goal is to detect, classify, and engage inbound contacts before they can launch weapons against your formation. Note that the AEW assets are both limited and essential to mission

effectiveness. Don't place them at unnecessary risk, and it is usually best to locate them slightly off the center of the threat axis.

2.07 CAP Assets. The Combat Air Patrol is the first line of defense in AAW and ASMD. If your CAP is strong and well placed, the enemy may never get the opportunity to attack the actual formation. *Note that the following guidelines assume that the CAP is being controlled, and is not using their onboard radar until lock on for launch.*

a) Weapons Range: The longer the Air to Air Missile range, the better. Remember that the more engagement areas the enemy must pass through before reaching his launch point, the more likely you are to kill him with his weapons onboard before he can use them against you.

b) Weapons Loadout: A good rule of thumb is to divide the expected strength of a raid by the Probability of Hit for the CAP's weapon. This will tell you how many weapons you need to have in the air at any one time, which in turn will yield the number of aircraft you need to have up on CAP. This number should never exceed 50% of your available Air to Air assets.

c) Effectiveness: A combination of the P-Hit of the aircraft's weapons and the aircraft's ATA rating. Always keep some of your best fighters either in close to the formation or on alert five.

d) Range/Time on Station: The longer your CAP can stay aloft (concurrent with crew fatigue), the better. Ideally, you will conduct turnovers on station, so that the CAP patrol is always on station.

2.08 SuCAP Assets: Your Surface Combat Air Patrol is a group of attack aircraft fully armed and fueled that orbits out along the axis you expect hostile surface units to approach from. They are ideally suited to engage light surface units and small (poorly defended) groups well away from the formation. They are not suited to engage a large or well defended surface group or land target. A mixed group with a mixed weapons loadout is ideal, and a jammer equipped aircraft is a must.

2.09 Aerial Tanking Assets: These are an instant means of extending the legs (effective range) of your aircraft, and of keeping your aircraft on station longer. The current version of Harpoon has no provision for aerial refueling, but tankers are the key to keeping the air battle well away from the formation.

2.10 Maritime Patrol Assets: These are great eyes and ears for the formation. Open ocean ASW is rather like hunting for a needle in a haystack, so use your Maritime Assets as either a barrier, or a to sanitize the PIM (Path of Intended Motion) for the formation, since this is where the submarine threat is greatest.

3.0 THREAT SUMMARY

3.01 AAW/ASMD Threat: These two threats are the fastest to develop, and have the greatest effective range of the threats typically seen in modern naval warfare. Most aircraft and weapons travel at a high subsonic speed, and quite a few weapons and aircraft are capable of supersonic speeds, both of which translate to a relatively short period of time between weapons launch and impact.

a) Threat Axis: This is the direction from which you expect hostile aircraft and missiles to approach from. In HARPOON, the enemy will almost always follow the straight line path from his current location to yours.

Most opponents in the real world are not this obliging. A crafty enemy makes it a point to show up from a direction where you wouldn't normally expect to see him.

b) Weapons Range: Your goal is to keep the platform that carries the weapon from ever getting within range.

3.02 ASW Threat: This one breaks down into the major groupings of missile armed submarines, nuclear attack boats, and conventional attack boats. The missile boat is probably both the most dangerous and the easiest to deal with. If your AAW/ASMD defenses are good, he's no threat unless he's part of a coordinated raid (VERY hard to do in Harpoon!). An SSN or SS that manages to get into your main body, on the other hand, is a nightmare of the first order. The key is to keep the enemy's submarines out of the formation, by detecting them at long range and engaging them with aerial assets.

a) Path of Intended Motion: This is the area of greatest danger. A submarine that gets into the path of a formation and then waits for the formation to run over it is in perfect attack position and is very hard to detect. Your best assets should thus be towards the front (relative to PIM) of the formation.

b) Minimum Speed Of Advance: Speed is a two edged sword in ASW. The faster the formation goes, the more noise it makes and the less effective its sonar is. On the other hand, a submarine attempting to intercept the formation must go faster and make more noise, thus increasing the odds of their being detected.

c) Weapons Types/Ranges: Remember that the cruise missile put every surface combatant at risk, but the Torpedo can strike with little or no warning. If a missile armed submarine should manage to make it into the main body of your formation, the combination of missile and torpedoes will leave you reeling.

3.03 ASuW Threat: The ASuW threat is mentioned last for one major reason. If you have adequately covered the rest of the threats, you will probably do fine against the surface threat. But there are two things to be keenly aware of!

a) Threat Axis: If you know the enemy has surface units in the general area, then you can define a bearing along which you expect them to approach. This will also be the bearing along which his missiles will approach, since Harpoon does not model way points for missiles.

b) Weapons Range: Again, if you never let him get within range, he can't hurt you.

Examples

1. US. CVBG, Mission: conduct strike warfare against the Kola Peninsula. Mission Essential Unit: USS INDEPENDENCE.

USS INDEPENDENCE (Independence CV)

USS BUNKER HILL (Ticonderoga BLK-0 CG)
Medium Shooter, CZ Capable ASW platform.

USS VALLEY FORGE (Ticonderoga BLK-1 CG)
Medium Shooter, CZ Capable ASW platform.

USS FIFE (Improved Spruance DD)
Self Defense/Point Defense shooter, CZ Capable ASW platform.

USS HEWITT (Improved Spruance DD)
Self Defense/Point Defense shooter, CZ Capable ASW platform.

USS THACH (O.H. Perry FFG)
Short Shooter, CZ Capable ASW platform.

USS RODNEY M. DAVIS (O.H. Perry FFG)
Short Shooter, CZ Capable ASW platform.

USS CURTS (O.H. Perry FFG)
Short Shooter, CZ Capable ASW platform.

USS MCCLUSKEY (O.H. Perry FFG)
Short Shooter, CZ Capable ASW platform.

Threat

AAW: Regimental Strength TU-22 Backfire raids from 000T-060T.
ASW: 360 degrees, PIM 280 at 14 Kts.
ASuW: Major SAG including Kalinin and Novoryssisk, 340T-020T.

PIM: 030 at 14 Kts
Zone Sizes and Assignments:

Main Body=20NM
USS INDEPENDENCE (ZZ) (Formation Center)
USS BUNKER HILL
USS RODNEY M. DAVIS

AAW Ring=40NM Note: being used as joint AAW/ASW patrol zone.
USS MCCLUSKEY (Sector 1 (000-045))
USS THACH (Sector 2 (045-090))
USS FIFE ((Sector 3 (090-135))
USS CURTS (Sector 5 (180-225))
USS HEWITT (Sector 8 (225-270))

ASW Ring=120NM Note: being used as surface picket zone.
USS VALLEY FORGE (Sector 1 (000-045))
Reserve CAP + Tankers (Sector 2 (045-090))
Reserve CAP + Tankers (Sector 8 (315-000))

Picket Ring=255NM Note: being used for AEW and CAP.
AEW + 4 CAP (F-14) (Sector 1 (000-045))
AEW + 4 CAP (F-14) (Sector 2 (045-090))
SuCAP (Sector 8 (315-000)

Stations: defined as 1-8 by zone starting at the sector whose left hand boundary is 000T. Thus Zone 1 (000-045), Zone 2 (045-090), Zone 3 (090-135), Zone 4 (135-180), Zone 5 (180-225), Zone 6 (225-270), Zone 7 (270-315), Zone 8 (315-000).

How to Keep your Bases Intact

Everyone knows they have to defend their bases from the ravages of the enemy. But all too often the bad guys sneak in and ruin your whole day. So how do you effectively stop them?

Well, first you've got to take stock of the situation, using much the same methodology we used in setting up a formation.

1. Mission Requirements
.01 What is your mission
.02 Which bases are mission essential
.03 Which bases are less critical to the mission at hand

2. What assets are available
.01 Static defenses

.02 Air Assets at this base
a) Long range fighter/interceptor
b) Short range fighter/interceptor
c) Switch hitters
d) AEW
e) SuCAP
f) Helicopters.
g) Transports

.03 Air Assets which can be ferried in

3. What is the threat
.01 Air threat and expected approach axis
.02 Ship/Sub launched cruise missile threat and expected approach axis.
.03 Surface Bombardment threat

4. CAP and AEW Placement
.01 BARCAP
.02 Overhead CAP

5. Formation Editor or independent patrols?

6. Stores Management

The maxims discussed in designing formations also change appreciably:

1. You can't hide. *(so there is not much of a requirement for EMCON. Your goal now becomes detecting the enemy before he can get close enough to hurt you, or beating him to the punch.)*
2. You can't run. *(So you'd better be ready to fight. Draw your "line in the sand" and then kill anything that crosses your line.)*
3. Expect the unexpected. *(Since your position is both known and fixed, the enemy has a much better opportunity to approach either off axis or along multiple axes)*
4. Engage the launch platform, not the weapons fired from the platform. *(Shoot the archer, not the arrow...)*
5. Take the battle to the enemy. *(If he's reacting to your actions, its much more difficult for him to arrange a combined strike.)*

1.0 Mission Requirements

The Mission remains the first priority. A base should not be needlessly sacrificed, but if the mission can not otherwise be accomplished, so be it. A careful review of the mission orders remains essential, but you are now trying to evaluate just how important each base is to your overall mission. Be careful, a certain base may never be mentioned in either the orders or the victory conditions, but may still be essential to accomplishing the mission.

1.01 What is your stated mission? This is actually the easy part. There may be an unspoken assumption or tactical necessity implied in the orders that is essential to mission accomplishment and which is hard to discern. Once you've read and understand your orders, place yourself in the enemy commanders position. Doing so may reveal an unexpected vital area or location that is not immediately noticeable from a one sided perspective.

1.02 Which Bases are Mission Essential? Now that you know your orders and your enemies tactical situation, what bases are essential to accomplishing your mission, and which are of lesser importance. You'll have to find a compromise between "Don't put all your eggs in one basket" and "Put all your eggs in one basket and then guard that basket!"

1.03 Which bases are less critical to the mission at hand? You may find that some bases are either not threatened or are of limited value to your mission. If you find that this is true, you may be able to remove some air assets from these bases to re-enforce the critical and/or threatened bases.

2.0 Available Assets

Now you must take careful stock of all the available assets. Be very careful at this point about making assumptions. Aircraft are, by their very nature, highly mobile units which can be readily relocated. If they aren't doing you any good where they're based at the beginning of the game, **move them.**

Caveat: Not all bases have the necessary weapons and maintenance facilities for every aircraft. A Tomcat that lands in Iceland is probably not going to be able to re-arm with Phoenix missiles in the real world.

2.01 Static Defenses. These require a little bit of research, but it's important information. Some bases have much better air defenses than others, which will effect the kind and number of aircraft required to effectively defend the base. The MAIN BODY ring of the FORMATION EDITOR should also be set to the maximum range of best AAW weapon in the static defenses.

This keeps you from mixing friendly fighters in amongst the SAM's during a raid. Mixing the two is a sure fire formula for fratricide.

2.02 Air assets at this base. The immediately available assets will be grouped by capability in order to use them to best advantage. The primary distinguishing points are:

a) Long Range Fighters/Interceptors. These are the aircraft that should first meet the enemy and begin the process of attrition. Another important consideration is weapons range, in that a very long range AAM can offset short legs.

b) Short Range Fighters/Interceptors. These should be your second line of defense,

or your first line along a low threat axis.

Shooting down the bad guys (or their in-bound vampires) is the mission of the fighter jocks. Designed to fulfill at least two of the three basic principles of Fighterdom (Fly High, Fly Fast or Fly Stealthy), the latest generation of these aircraft feature multi-mode, look down/shoot down, multi-track while scan radars and beyond visual range (BVR) weapons systems. Properly employed, F-14 Tomcats are the champs in AA engagements in Harpoon. The addition or deletion of as few as four of these platforms can radically change the balance of a scenario.

c) Switch Hitters. These are your fighter bombers or "Swing mission" aircraft. Their capabilities vary, but they are usually not the best fighter or interceptor around, as a compromise was reached between their two or more missions in the design process. While these aircraft should not be your first choice in air defense, they are often more effective than dedicated fighters of earlier generations. In any case they certainly are much better than nothing, and make a good gap filler against very large raids.

d) AEW. Airborne Early Warning is one of the keys that will allow you to detect and destroy the enemy before he can reach weapons release range. As you increase the surveillance area and push the detection threshold further from your base, the enemy is subject to earlier attack and greater attrition before weapons release.

The AEW aircraft are true force multipliers. Properly employed, their long range radars allow you to detect, classify, identify and assess threats long before they would be detected by land or ship based sensors. The E-3 Sentry is the best platform available to you in Harpoon for this mission type.

e) SuCAP. A base may discover surface targets of opportunity, so it is usually a good idea to maintain a small force of aircraft orbiting out along the axis you expect to see enemy surface units approach from. This will allow you to jump small formations before they know they are at risk. Use of SuCAP is not recommended against large or well defended formations.

f) Helo's. With the exception of the fighter role, helicopter platforms exist that are mission capable in all of the areas mentioned here. Slower, with limited range and weapons carrying capability, the helo's are nevertheless effective because their vertical takeoff ability allows them to be carried on many ships, and all ports and air bases.

Don't discount the striking power of helos. AH-1's at very low altitude, loaded with Sidearms and Hellfires can do just as effective a job at taking out a radar system as the "zoomies". Just ask the Iraqi's.

g) Transports (and other targets). They're included. Without proper planning and protection, however, expect them to lead short lives with violent ends.

2.3 Air Assets which can be ferried in. Again, there is no reason you can not bring in aircraft from other bases (or from other Groups, for that matter) to defend a critical installation that you feel is threatened. Just remember that the aircraft on the ground will be lost if the base is destroyed! Take only the assets you need for defense until you become certain that you can defend the base, then you can expand to a more offensive line-up.

3.0 What is the Threat?

Determining the threat against a base is a rather tricky thing to do. The first problem is accurate intelligence about the enemy order of battle. A bad call on strength will either cause you to waste assets on a threat which doesn't exist, or to become overconfident concerning your defenses. The really uncertain area in real life is what is referred to as "Intentions," i.e. what does my enemy have in mind? But credibility concerns aside, you will have some intelligence, and you will have to use this information to your best advantage.

Congratulations, Commander Nugget, you've just assumed command of all those brand new, shiny airplanes parked out on the flight line. Want to keep 'em all bright & shiny like that? Want to avoid smoking craters where you used to have a runway? Listen to Gunny.....

The fastest way to have your command end up a smoldering scrap heap is to fail to figure out where the bad guys are and from which direction they are most likely to attack from. The professionals call this 'threat analysis". I often use a rather different term which I am not allowed to use here...

Contrary to popular opinion, most military organizations have a pretty good idea of the capabilities, limitations, and order of battle of their prospective enemies.

4.0 CAP and AEW Placement.

Now that you have determined who the players are and what the threat is, it's time to actually establish the Combat Air Patrols and Airborne Early Warning Patrols that will keep you base in operation.

a) First of all, get your AEW birds up and on their way first. Their escorts (fighters) will have a speed advantage and can catch up on the way to the patrol area.

b) Second, as soon as they launch, get the AEW planes up to high altitude and turn on their radars. If your operating from a land base there's nothing to be gained from trying to hide.

Everybody knows where your base is and the extra miles and minutes of radar coverage can make the difference between turning back the OPFOR's initial strike and experiencing a very short and exciting game.

c) Third, always, repeat, **always** escort your AEW aircraft. Not in the same group (if you are using independent patrols), but nearby and preferably along the AEW platform's highest threat axis.

d) Fourth, never, repeat, **never** place your AEW aircraft along the primary threat axis of the base you are trying to protect. Offset your AEW from the threat axis by 30 to 45 degrees, and place them as far down range along the threat axis as practical (try not to put the AEW patrol within the OPFOR's radar coverage) up to about 200 miles.

Nothing can ruin your day like having OPFOR striker escorts take out your eyes on their way in.

4.01 BARCAP. Remember the objective? *Protect* your base. Your base can't be damaged if no ordnance is launched in your direction. The best way to prevent this circumstance is to shoot down the strikers before they get within launch range. *(Shoot the Archer, not the Arrow!)* With your AEW properly employed, you will see the OPFOR's strike package long before they can launch. The BARCAP's job is to shoot the enemy's strikers down before they can launch their ordnance.

a) The BARCAP should consist of groups of 2 to 6 fighters, armed with the longest ranged AA weapons available. The BARCAP should be positioned on the threat axis (or offset very slightly). The BARCAP should be placed down range at the maximum detect range of the AEW radar minus about 50 miles.

b) For example, I command Blue base 1. The OPFOR's (Red) base bears 045T, range 500 miles. I have an E-2 and 8 F-15C's. I would place my AEW E-2 at bearing 020T, range 150. Escorts for the E-2 would be a pair of F-15C's placed at bearing 025T. range 160. BARCAP of 2 F-15C's placed at bearing 045T, range 300.

Depending on the capability of the threat, you will need to adjust the composition of the BARCAP. A longer ranged enemy stand off weapon translates directly into a need more platforms in the BARCAP situated further out along the threat axis.

4.02 Overhead CAP & EW. In addition to the AEW escorts and the BARCAP, you should try to keep a flight of 2 AA fighters loitering over the base to help the base SAM systems deal with any leakers that get past the BARCAP. If available, an EW platform also improves your base defenses if you have it loitering overhead.

5.0 Formation or Independent Patrols?

In placing all of the above patrols, should you set them up as automatic formation patrols or manually control them? To a certain extent, this is a matter of personal preference. For land based situations, set formation patrols only for overhead CAP and EW support. All of the other airborne mission types (AEW,

BARCAP and escort), should be launched and managed manually. This lets the Staff Assistant take care of the recurring things and frees me to pay attention to the threats and my response. This also allows me to place my AEW, escorts, and BARCAP precisely where I want them, and at ranges that exceed the formation patrol upper range limit.

If you use formation patrols for BARCAP or CAP missions, be sure you check them often, particularly if you use the "intercept" feature. If you activate a formation patrol for an intercept, and the staff assistant has no ready 5 aircraft of the proper type and load out to replace the patrol you just activated, your formation patrol will be dropped! This can leave unexpected holes in your defenses that become apparent only at the worst of times!

6.0 Stores Management

Stores management in a defensive situation boils down to having as many AA equipped platforms available as possible at all times. Longer ranged radar guided AA weapons are obviously preferable, but don't discount the short range IR carriers. Used as a second line of defensive BARCAP or as a part of the overhead CAP, a flight of F-16A's with AIM-9's is still quite useful.

Two tricks to help here. First of all, remember that timing is everything. In the early moments of a scenario, having the optimal loadouts on all the aircraft is not nearly as important as getting the AEW birds up, protecting them and setting up an effective BARCAP. Scramble those aircraft! Then, reconfigure half of the remaining aircraft to their optimal loadouts. Thirty minutes later, when they are again at ready 5 status, reconfigure the remaining half. When the AEW escorts and the BARCAP bingo and return, reconfigure them to optimum.

Secondly, recognize that the ideal time to reconfigure any aircraft is after it returns from a mission. You pay no time penalty at that point.

Defensive tips

1.0 Intercepts of unescorted bombers

This one is really easy. Hit 'em early. The farther away from launch point, the better. Hit 'em hard. Press the attack until they turn back or you're Winchester (Pro-Word for out of ammunition). If they turn back **and** you have backup BARCAP on the way (**and** there are no other immediate threats, **and** your BARCAP still has AA missiles **and** plenty of fuel), then consider (not execute, just consider) pursuit. Barring these conditions, let the bombers go. Get your fighters back down to refuel and rearm for the next set of strikers. By making them turn back before they launch, you have achieved a "mission kill" and accomplished your mission. Don't get greedy!

2.0 Intercepts of escorted bombers/attack planes

Your response needs to vary here, based on how many escorts are present and if your backup BARCAP can engage before the strikers can launch against your base. If the BARCAP out numbers the escorts by two or more aircraft **or** if the backup BARCAP can engage before the strikers are in range **and** the total number of BARCAP aircraft exceeds the number of escorts by two or more, your primary BARCAP should engage the escorts first, expending all of their radar guided AA missiles in the engagement. If the primary BARCAP is successful in eliminating the escorts, it should engage the strikers until Winchester. Only at that point should the backup BARCAP engage.

If the primary BARCAP doesn't get all the escorts, it should withdraw, but trail the engagement to be in position to re-engage when the backup BARCAP has had a chance to deal with the escorts. The backup BARCAP should engage the escorts until they have been eliminated or until all radar guided missiles have been expended. At this point, all of the BARCAP members should engage the strikers until they are eliminated or turn back. The same rules of pursuit apply as above.

Range to launch point and aircraft availability will determine if launching additional BARCAP aircraft is an acceptable option.

3.0 Dealing with the OPFOR's TARCAP

The nice thing about Computer Player as an opponent is his predictability. Show him a target that matches his mission loadout and he will engage it. Popup a group of AA aircraft and light off their radar. The Computer Opponent will immediately attempt an intercept. You can use this to your advantage by drawing the Computer Opponent's air defense assets off station and away from your strikers.

A human controlled OPFOR will not always be so cooperative.

4.0 Fighter vs. Fighter

In fighter vs. fighter conflicts, the first important factor to consider in the early stages is the effective ranges of the weapons on board each set of aircraft. If you have the range advantage, don't hesitate, use it! Don't give up the range advantage until absolutely necessary. Don't continue to close with your target and place yourself inside the targets' missile envelope. Match course and speed with the target to maintain your range advantage as long as possible.

You must also understand the capabilities of the missiles that you are about to use. If your target is at high altitude and you are at very low altitude, AIM-7F Sparrow, AIM-9 Sidewinder, AA-10 Alamo B, AA-11 Archer, AA-2 Atoll or AA-8 Aphid missiles will be operating at a disadvantage.

This also suggests some good defensive tactics, doesn't it!

Third, lure The Computer Opponent into engaging when he can't win. Match altitude and light off your radar announcing your presence to The Computer Opponent's CAP. When they move to engage, go to low or very low altitude. Lay in a course directly away from The Computer Opponent's CAP. Now set your speed

to "loiter" and wait. When The Computer Opponent launches, go to high altitude, select afterburner and beat feet! Usually, you will out range The Computer Opponent's missiles and they will fall to earth harmlessly. Two or three repeats of this will allow you to engage the CAP with a significant range advantage.

Fourth, remember that one way of dealing with most radar guided missiles is to shoot down the launch platform. This can get very hairy and won't work against missiles with their own terminal active radar homing capability (like AIM-54 or AA-9).

Finally, a word about fratricide. An uncaged AIM-54 has **no friends**. If the launching Tomcat does not maintain a constant radar lock on the target, the Phoenix will lock up the first biggest radar contact it "sees". You should disengage any units that are in knife fighting range when Phoenix totin' Tomcats join the fracas. Set a course 90 degrees off the bearing of the incoming F-14's, change altitude by at least two bands, and get the heck out of Dodge.

It is considered bad form to shoot down one of your squadron mates, but in the words of one fighter jock: "Hey, if some bozo catches a Phoenix in the snot locker because he was hangin' around where he shouldn't have been, well tough! I intend to use those big babies like God and Hughes intended."

5.0 Vampires (ASMD)

BARCAP didn't get all of the strikers? Relief BARCAP didn't get there in time and now you are "tracking multiple inbound tracks, constant bearing, decreasing range" (probably the scariest combination of words in any language for a naval officer!)? What to do?

5.01 Don't panic. If the vampires are cruise missiles and your AEW is picking them up, you've still got time. Light up the radars in your group. . The OPFOR knows where you are already, so the name of the game has changed from 'hide 'n seek' to survival. Losers swim.

5.02 Take Control. Split your overhead CAP off from the formation, and manually lay in an intercept course. Light off their AA radars and select afterburners. As you close to engagement range, match altitude with the vampires. This is critical! If you do so, even AIM-9 Sidewinders can help intercept.

5.03 Determine the Targets. From the Unit window, check the course of the inbounds and the bearing of the inbounds from each of your ships. This will give you an idea of which ship or ships are targeted. If these ships have air assets that can be launched and recovered elsewhere, launch them and loiter them overhead until the results of the attack are known. If they can return to their launching platform, great. If not, at least you still have those assets to fight another day.

5.04 Check Attrition. Now, check the status of the inbounds. If there are still more than six or so, and they are just entering into the engagement envelope for

your long range AAW shooters, you're probably fine. If they have been in engagement range for a minute or two and there are still more than six or so, you may want to launch another flight of AA interceptors to assist. Launching in groups of 2 is preferable here. Larger groups take too long to launch and form up.

6.0 ASW

Is the Submarine in your backyard driving up insurance rates? You must jump on these guys quickly, particularly if they are on the PIM. Vector any fixed wing ASW forces in the area there immediately. They can get there faster and carry more of those long skinny things that go "bang" than helos.

6.01 Maintaining Contact. If you have a unit with a tail, and it's in contact but out of range of the sub's weapons, consider splitting it off from the main body and leaving it at creep speed. This avoids the problem of losing contact when the guy with the tail stops drifting and starts sprinting to the next listening position.

6.02 Launch a helo. If there are fixed wing ASW forces in contact and you have a helo with a dipping sonar set, sending it is ideal. Wait ten or fifteen minutes, and if your forces are still in contact, send another helo. Wait another ten minutes and send more fixed wing ASW.

6.03 Taking Manual Control. You may want to take manual control of the fixed wing ASW assets if you have more than one involved. If you don't, they tend to follow each other around, dropping their sonar buoys in the same locations. I normally take control of one of these aircraft and lay in a course at a 90 degree offset to the course taken by the aircraft that the Staff Assistant is controlling. I'll make the two courses intersect at the middle of the area where the sub is hiding. Next, I'll set the altitude to "Low" and use the Unit window to watch the unit move. At about 30 second game time intervals, I'll hit the ".", causing the aircraft to drop a sonar buoy. In this manner, I lay out a big "X" over the sub contact.

"X" marks the spot! If it's a NUC, don't forget to file an environmental impact report...

Strike Warfare

Offensive Missions vs. Land Based Targets

The best defense is a good offense. That's true in Harpoon, too. Mounting attack missions against land based targets are straight forward. They don't move and you know where they are right away. The problem is getting to them.

1. AEW

From an offensive standpoint, the purpose of AEW is to tell you where the OPFOR's air assets are located and what their composition is. Offensive AEW planes and their escorts are usually the first aircraft in the strike package to be launched. Remember, protect those "eyes".

2. TARCAP

The TARCAP groups would be the next group launched. Their mission is to transit to the target area and clear the way for the strikers. This normally means that they will want to shoot down any OPFOR AEW aircraft that they can find and either shoot down or engage in such a manner as to draw off out of the strikers PIM, any OPFOR BARCAP or overhead CAP that may be encountered.

2.01 Who Belongs on TARCAP? Long shooters with good radar ranges and lots of legs work well in the TARCAP role. I'll normally use two sets of TARCAP, offset 30 degrees on each side from the strikers PIM and at a range from the target such that anything going "wheels up" is targeted from the moment they are airborne.

2.02 When out numbered or out gunned. If the TARCAP is out numbered or out gunned, scratch the mission and come back later if possible. If that is not possible, the TARCAP must move the engagement away from the strikers PIM as much as possible, hoping that the strikers and their close escorts can deal with the situation.

3. SEAD

These troops should carry anti-radar missiles and other such standoff weapons as are available to damage the ground based radar of the target. There should be a sufficient quantity for them to launch several waves of anti-radar missiles or other standoff munitions during the attack.

The SEAD section is normally accompanied by a flight of AA fighters as close support.

4. Strikers

If fighter pilots make headlines, these are the guys that make history. Recognize that everything else that has been done to this point, all of the aircraft in the air, and all of the tactical maneuvers, have been in order to let these aircraft do there jobs.

4.01 Strike Package Escorts. Your strikers should be accompanied by fighters for close escort and by EW platforms to jam any surviving OPFOR radars. If they are capable, the strikers should ingress the target area at very low altitude, making the change to this altitude beyond the range of the OPFOR's best air search radar.

4.02 Strike Package Loadouts. Don't mix loadouts among the strikers! This exposes the aircraft carrying the longer ranged weapons to danger when they could be and should be heading for home! Instead, use smaller groups of aircraft armed with similar weapons.

Offensive Missions vs. Naval Surface Targets

Offensive missions against naval surface targets are more difficult simply because in the beginning, you don't know where the OPFOR is or what his order of battle is.

1. AEW

In addition to finding out the location and composition of any airborne OPFOR assets, your AEW should also be used to determine the composition and formation of the OPFOR surface group in question. Use the Unit window to examine the formation of the OPFOR group. Look for an exposed flank or a gap in the AAW coverage that you can exploit.

2. TARCAP

The TARCAP for a naval strike mission has the same mission as the TARCAP for a ground strike. The TARCAP should be positioned to shoot down all of the OPFOR AEW platforms before they detect the inbound SEAD or striker flights.

3. SEAD

The job of the SEAD flights is exponentially tougher against a naval group than against a surface target because there will be many radars that will need to be blinded and many platforms capable of shooting down both your planes and your incoming ordnance.

3.01 SEAD Tactics. The SEAD flights must use wave tactics, launching waves of anti-radar missiles before, during and after the time that the strikers and their weapons are ingressing the target area. If at all possible, launch SEAD attacks from more than one axis, simultaneously.

4. Strikers

Coordination between the SEAD flights and the strikers is the key. After the first wave of anti-radar missiles is launched, the strikers should launch a wave of standoff missiles. A second wave of anti-radiation missiles should be fired by the SEADs timed so that the standoff missiles and the anti-radar missiles arrive at the same time.

4.01 Jammer Support. Again, the strikers should be supported by EW platforms and attack from very low altitude. If at all possible, the strikers should be split into more than one group, attacking along the same general axes as the SEAD flights. Use the gaps located by your AEW to give you "corridors of attack". If fuel range permits, an attack from dead astern of the OPFOR formation can have devastating results.

The desired effect is to enfold the OPFOR group in the enveloping arms of a very angry bear.

5. Harassment attacks

You may not have the assets assembled for a major (Alpha) strike. If you

can sneak a few standoff loaded strikers in range, lobbing a few missiles at the OPFOR formation isn't a bad idea. Assuming you don't do anything dumb (like getting a P-3 shot down!), the worst that can happen is that the OPFOR group lights up all of the radars, allowing you to get a positive position fix and a real good idea of their PIM and MSA. These bits of information are very useful in planning the real Alpha strike.
Besides, you might get lucky!

Offensive Missions vs. Submarines

The feelings of Surface Warfare types towards both submarines and snakes are pretty closely aligned. Their response to the sighting of either is identical. They want to kill it, or run away, now.

To make a submariner's life miserable, you must first find him. Having done that, proceed to assign waves of attackers in intervals of 5 to 15 minutes. Give first preference to fixed wing ASW, but don't leave out the helo guys.

The combination of fixed wing ASW with sonar buoys, a pair of helos with dipping sonar, and an attitude on the part of all the Airedales can make for some long and unpleasant nights under the surface of the sea.

Escort Missions

Airborne escort missions are no different than naval escort missions, except for the speeds and altitudes of the participants. You still have two basic choices of techniques: the safe bubble or the safe corridor.

In the former, you want to sanitize an area around the asset that you are escorting and move that sanitized area along with the escorted asset from point of departure to destination. Contacts that enter the "safe zone", or that demonstrate intent to do same, are prosecuted. Contacts on the flanks or astern that demonstrate no intent to intercept are ignored.

In the later, you want to establish a "no fly" zone for OPFOR aircraft. Having set up a picket line of CAP, with overlapping engagement envelopes, you then pass your unit of value from point of departure to destination behind the picket line and out of danger.

Offensive Tips

1. Blind 'em

If they can't see you, they can't shoot you. Take out all of the OPFOR AEW assets early and establish CAPs so that their replacements meet similar fates.

The warfare equivalent to the street fighter's thumb in the eye. No less effective.

2. Shoot First

Longer ranged weapons are better, but only if you use them first.

Get the first lick in and make the OPFOR honor the threat.

3. Strike package design

If you want realism and a real challenge, then strive for a balance of PGM and unguided loadouts. Time on target then becomes the critical factor. Can you manage the strike such that the iron bombs arrive on target while the OPFOR still has it's hands full with HARMs? If you want a shoot 'em up, load out with HARMs and HARPOONs and sit out there pounding 'em to death.

But if you do that, don't play Harpoon II head-to-head with me. I'll clean your clock!

4. Find the chink in the armor

Look for the weak spot. It may be an improperly designed formation. It may be a ASW picket that can't protect itself adequately and just happens to cover the PIM for one of your subs.

5. Stores management

Because you control the timing of your strikes, this is not as important as on the defensive side of the house. Nevertheless, remember that the best time to change loadouts is after a mission.

Submarine Warfare

The Submarine is the original stealth weapon. Much like a hunter, it stalks its prey from concealment, and depends upon surprise for effectiveness. The elements of stealth and the stalk dominate effective submarine warfare.

The Ideal submarine attack is only discovered when the target vessel is struck by a torpedo or cruise missile, which causes the target vessel to sink so rapidly that it cannot even report that it has been attacked.

There are two kinds of ships in the world: Submarines and Targets...

Sonar and CZ's

Sound is a submarines contact with the outside world, and Sonar is both the greatest tool and the greatest danger to a modern submarine. The submarine has two great advantages in the realm of underwater sound and sonar: First, the submarine can significantly effect its cavitation speed by controlling its depth;

Second, the submarine always knows where the Thermocline (or the Layer, as it is often called) is and can choose its depth accordingly. In contrast, surface ships will tend to cavitate at a much lower speed since their screws are closer to the surface, and only those ships equipped with a Dipping Sonar, Variable Depth Sonar (VDS), or towed array sonar can effectively hear noises made beneath the Layer.

There's an area just below the Layer known as the "Shadow Zone." Noises made in the "Shadow Zone" are almost never detectable across the Layer, and active sonar is diffracted away from the "Shadow Zone." For this reason you will usually find submarines on the stalk at this intermediate depth, and they will occasionally go shallow to check the surface duct...

Convergence Zones are both boon and bane to the Submariner. Convergence Zones are a naturally occurring phenomenon wherein sound waves are bent back towards the surface as a result of pressure in very deep water. In the open waters of the Atlantic and Pacific Oceans the First CZ rises to the surface 32nm from the sensor/source, and is two miles wide. The Second CZ is found at 64nm from the sensor/source, and is four miles wide. The pattern continues for the Third CZ and beyond.

The boon aspect is that a submerged submarine can hear those noisy surface platforms in a CZ, track the platform long enough to get a pretty good idea of who/what is out there, and get a good enough solution for position, course, and speed to plot an intercept. The bane is that any noises made by the submarine may very well be detected in return.

Closing the Contact

Once a target has been detected, classified/identified, and located, the submarine may choose to either close and engage or break contact and open. Most will choose to close the contact. The question is, how fast? Ideally, the submarine is in the path of the target in question, and need only lie in wait. More often, the submarine is faced with a beam or stern chase. If the course for intercept recommended by the Staff Assistant has a speed less than 12 Kts, there is a pretty good chance of getting in undetected. If the speed is over 12 Kts, your best bet is an end run. Go deep, go fast, stay well clear of the flanks, and get well ahead of the formation. Also remember to creep occasionally. This will help prevent a hostile submarine from finding his way into your baffles, and will also allow you to see where your CZ's fall, which will in turn tell you if you are in danger of being detected by the target group.

Remember that stealth is your key to success. If the approach gets blown, or things go wrong, go away and come back later. Pressing an attack when you are being actively prosecuted is a very poor way of getting ordnance on target and a very good way of getting killed.

Missiles or Torpedoes?

The choice of weapons will have a huge impact upon the success or failure of an attack by a submarine. If the target group is running under EMCON-A

(Radars off), missiles may be a very good choice. If the target group is a large CV Battle Group or SAG with its radars on and plenty of AAW/ASMD platforms on hand, there is an excellent chance that you will not have sufficient missiles to roll back the target's defenses. Torpedoes are a greater risk weapon, since you must close to about half the maximum range of the weapon to be relatively sure of hitting the target. There is also precious little a surface combatant can do about a well executed torpedo attack except try to outrun the torpedo.

Missiles are the weapon of choice for what used to be the Soviet Union. They also planned on using their SSG's and SSGN's as part of a coordinated assault involving Air Launched Cruise Missiles, Surface Launched Cruise Missiles, and Submarine Launched Cruise Missiles. The theory is sound, in that a coordinated assault from multiple directions involving a large number of incoming missiles arriving at the same time would be nearly impossible to counteract. The difficulty is in coordinating the assault such that all the weapons arrive at the target at the same time (Simultaneous Time On Top, STOT). This is almost as hard to do in Harpoon as it is in real life.

A wise man once said that the genius is in the details, and a STOT missile attack from multiple axes involving submarines has a lot of pernicious details to overcome.

Torpedoes are the weapon of choice for the Western Navies. Western submariners are a notoriously independent and sneaky group of individuals who relish operating alone in hostile waters *(What they call a "Target Rich Environment").* This approach requires patience and iron nerves, as the infiltrating submarine must sneak into the very lions den before delivering its deadly surprise package. Again, you must close to within half the effective range or less to launch an effective torpedo attack.

The really high stakes option is to close into the main body and fire a sea skimming cruise missile from a range of six to eight miles. Such an attack has an excellent chance of hitting even major combatants with very good AAW/ASMD defenses since only point defense weapons will have an opportunity to engage the Vampire. The submarine can then follow up with a torpedo attack, as the missile attack will not usually result in a firm enough datum for the target group to do anything about.

Subs vs Subs

This is where the fight is really even, and thus to be avoided where possible. The only reasonable assumption is that if you can hear him, he can probably hear you as well. If you must (by virtue of orders or necessity) go after another submarine with a submarine, try to approach him from behind. There is a sixty degree cone centered on the stern of all vessels in which they are effectively sonar blind. Approach from this direction and with great caution. The boat you save could be your own.

Breaking Contact

If you come under attack, run away! Go deep and fast, with frequent changes in depth and course, for at least five to ten minutes. Then slow to creep and go shallow to see if you have gained any breathing room. Repeat as necessary

Sonar Model Notes

In the arena of naval warfare there are two primary forms of organic intelligence. The first is sensory input (the information directly reported by sensors), and the second is the information derived from manipulating raw sensory input. In the realms of Submarine and Anti-Submarine Warfare (and as an adjunct passive over the horizon targeting system in Anti-Surface Warfare), the primary sensor system is SONAR (**SO**und **NA**vigation and **R**anging). SONAR systems gather information from listening to acoustic energy traveling through the water.

The Information Game

Like most sensor systems, SONAR comes in both active and passive varieties. Simply put, passive SONAR is listening quietly for any noise made by other platforms in the water. From this noise a detecting unit learns only the bearing of the 'source.' This 'bearing only' information may be manipulated (through a process known as Target Motion Analysis (TMA)) and (eventually) yield a course, speed, and range to the target. Furthermore, if the source is distinctive enough and the signal processors of the SONAR are good enough, the operator may be able to discern considerable information about the type of target being listened to. For example a SONAR operator, after consulting his database, might determine that he is listening to a Soviet Charlie-class submarine, basing that judgment solely on the acoustic signature.

Shhh!

When listening passively with SONAR, a key objective is to make as little noise as possible. This helps you to hear better, and denies information about you to the target. After all, they can conceivably hear you too. For this reason reducing 'self noise' is a key design criterion in modern submarines.

'Ping!'

Active SONAR is an entirely different matter. The traditional 'ping!' of World War II era ASDIC and SONAR sets is familiar to cinema and Television audiences everywhere. Modern Active SONAR now comes in almost every frequency, ranging from sounds reminiscent of a lovesick tuba to ultrasonic frequencies inaudible to the human ear. The output power levels of active SONAR (particularly those from a nuclear submarines) have also changed dramatically. A typical modern SONAR (such as the AN/BQQ-5) has an output of about 250,000 watts, and is capable of boiling the seawater around the transducer!

Despite the advances in active SONAR power output, the principle

remains unchanged. Stated simply, the detector makes a loud noise and then counts while listening for an echo. The sound will bounce off any solid or air filled object in the water (like a submarine) and come back to the sender. The travel time gives you the range and you also know the direction the echo came from. Viola! You now have enough data (an accurate bearing and range) to shoot at your target.

Hydrophone Effects!

There is, however, one small catch; they also know where you are. In fact everyone in the vicinity now knows that you are present, and they have a rough idea of where you are. That's right... even those targets who were too far away for a return echo heard you make that noise. It is exactly like turning on a flashlight in a dark room full of nervous people with guns. It should thus come as no great surprise that Active SONAR is rarely used.

The Model

The SONAR modeling in the original versions of Computer Harpoon relied on a simplified system of ranges and percentages originally designed for the paper rules. The very nature of the paper rules implies that some simplification had to be done in order to make it playable. To make the system more realistic would have required (you guessed it) a computer. Fortunately for Computer Harpoon players, we have a computer. A better SONAR model was called for. The original system states that for every SONAR set or suite there is a maximum detection range and a percentage chance to detect a target within that range. Overly simplistic, but effective. The major drawback to this method is the percentage penalty for a target moving quickly (e.g. making more noise) never seems to offset the tactical penalty incurred for remaining in a detection zone for more than a few minutes. Every thirty seconds a detection chance was attempted. Even if a platform was creeping along really quiet, the inescapable math of 5% x 30 minutes (60 chances to detect) meant it was going to be heard eventually. Clearly a system that reduced the range for a given target noise source level was needed.

Figure of Merit:

The new SONAR model keeps track of several new data items. The first thing the system does is generate an ambient ocean noise level for a given area, based on such factors as sea state, temperature, water depth and noise generated from biological activity, local shipping, the ice pack and shoals. In the course of play the model looks up how much radiated source noise a target creates and modifies it according to activity (speed, transients, cavitation, etc.). The detecting SONAR suite is then looked up. For each suite we store a value known as a 'recognition differential'. This is a kind of general signal-to-noise ratio that tells us how much source signal can be picked out from amongst the background noise by the sensor. These values tend to range from -1 to -10 with lower values being better. By comparing the recognition differential (RD) to a target signal (SL) +ambient noise (N_A)+self noise (N_S) composite, we derive a Figure of Merit (FOM) for that SONAR versus that source.

$$FOM=SL_T-(N_S+N_A)-RD_S$$

This FOM is indexed against the appropriate transmission loss curve table (a lookup table specific to the frequency ranges of the source and sonar, and the geographic location and time of year), which translates directly into a range. This derived range is referred to as an R_{50} because it is the distance at which an average alert operator of that SONAR can hear a given source (under the same ambient conditions) 50% of the time.

R_{50}=FOM / TL

The Probability of Detection is thus the dividend of the R_{50} and the actual range of the target.

$P_D=100 - (50 \text{ ´ } R \div R_{50})$

Integration

One other important change needs describing; These detection values are accurate for an integration time of 5 minutes, not thirty seconds. So we now run the detection every five minutes unless something in the picture drastically changes. Minor changes in detection probability are compared to the original detection roll until a detection threshold is reached. Then another attempt to detect can be made. This prevents a new detection attempt every time the target makes a minor change to course or speed. The goal is to avoid making multiple detection rolls for the same circumstance. In reality, if the operator or the signal processing software didn't notice the target the first time, chances are he won't notice it again until something major changes.

The Active Model

Active SONAR is very similar to the passive model. The two important differences are twice the transmission loss (active signals must go out and come back) and another modifier for target gain (G_T, how much sound bounces off the target). Target gain is effected by aspect (angle of the target relative to you), size (a torpedo is very small, a Typhoon is very large) and by reflectivity (anechoic tiles, stealthy contours, etc.). We keep approximate source volumes (SL_T)for active sets and plug those into the model described above. Thus:

$FOM_A=SL_T-(N_S+N_A)-(RD_S + G_T)$
$R_{50A}=FOM_A / (TL \times 2)$
Pda=100 - (50 ´ R÷R50a)

Derived Information

Finally, we are also trying to insure that some of the new features (Passive Ranging Techniques) and realistic operational limitations (harder target motion analysis, crude bearings only from low frequency sonar sets, operator alertness, etc.) are modeled with more realism and accuracy. Our test of the model is always; "Do real-world tactics work better than 'playing' the game system?". That is the true test of any simulation.

GIUK BATTLESET

Project Peninsula 94

by BI Hutchison

SCENARIO INTRODUCTION

Peninsula 94 is a series of 4 related scenarios (Recon, Ingress, Strike Ops. and Egress) representing different phases of a U.S. multi-carrier battle group attack on the Kola Peninsula. From the Russian perspective this is the mission the navy has trained for since it's beginning: defense of the home land.

These scenarios are related by a common order of battle and a concurrence of mission. They should be played in order and from the same side to appreciate the developing momentum an operation of this magnitude has. The scenarios Strike Ops and Egress should be played with the nuclear option "on" and the magazines full option "off."

Casualties on both sides will be accounted for in a general way from one scenario to the next utilizing the percentage chance of appearance within a group. Any other discrepancies can be accredited to poor bomb damage assessment and better than expected damage control.

Reconnaissance

Scenario:

From the blue perspective this scenario is a submariners delight. A force of SSN's must enter Russian waters and conduct an intelligence sweep of the area prior to the arrival of the CVBG. This scenario is going to require discipline and restraint on the part of the blue player if he hopes to be successful in the overall strategy. Many targets of opportunity may present themselves but adherence to the rules of engagement is the only way to win.

From the Red perspective it's only a matter of time. Much of the fleet has been forced to retreat out of the North Atlantic and is now trying to re-group in the Norwegian Sea. The next logical step for the blue force is an attack on the Kola peninsula by a large CVBG which would surely be preceded by a sub force to gather intelligence. This scenario is a large scale ASW operation with a wrinkle, that being several unescorted capital ships in transit to reorganization points. The challenge here is force allocation. With limited first line ASW assets hard choices will have to be made and risks taken.

INGRESS: The Carriers Move North

Scenario

This phase of the operation is probably the most nerve racking on a battle group command staff. Discovery now could mean fighting all the way to the target area and facing an alerted enemy, or the cancellation of the mission altogether. Emission control and long range ASW operations are the order of the day. Russian search activity can be expected to increase as you close on the target. This scenario is primarily an escort mission and an exercise in staging. All capital ships must make it to their assigned operating area with time on station requirements.(very short)

From the Russian perspective this is an offensive submarine operation. Any battle group attempting an attack on the Kola peninsula has to enter very heavily traveled submarine routes and should be susceptible to detection. A creditable air component will be available to prosecute any surface contacts, although particular attention should be given to support groups. This scenario is designed to illustrate that there is more than one way to skin a cat. The player will be tempted to attack the 1st contact which will be heavily defended. The key here is the support group, get to them and the operation is over.

STRIKE OPERATIONS: The Carriers Arrive

Scenario:

This is pay dirt for U.S. forces: conduct large scale strike operations against the home of the Red Banner Fleet. While the mission is straightforward this scenario promises to be a case study in contingency planning as situations change fast in a high threat environment. Asset allocation and formation rotation is the key to survival for surface elements in this scenario. To be successful in the strike arena of this scenario, solid fundamentals must be adhered to. Any deviation may have catastrophic effects on the overall plan, As a carrier is useless without it's aircraft.

From the Russian perspective coastal defense has been at the heart of fleet planning since its inception, though it was expected that more high value assets would be available for the task. The player will be expected to focus remaining assets in defense of land based facilities. The nuclear option may be available late in this scenario if the damage to land based facilities becomes too high. Since no single group has the striking power to penetrate a CVBG defensive screen, coordination is the key in offensive operations.

EGRESS

Scenario:

For Blue forces it's time to withdraw. Relentless attacks have begun to take their toll as casualties mount and magazines are down to their last reloads. Russian defenses are well aware of your approximate position and attacks are growing in size and determination. Speed is life. Return to safe waters as soon as possible. The air defense network is now operational at Keflavik, so air support will be available. Safety should be considered 600nm from Keflavik. This scenario will illustrate the difficulties a battle group commander will face in fighting a rear guard action against a force receiving reinforcements. Deception should play a critical part of any strategy. Survival of the Carriers is critical to future operations.

From the Red perspective revenge is the order of the day. Attacks by U.S. forces have done grave damage to Red Banner fleet facilities and eliminated much of the high level command staff in the area. The President has committed the bulk of the naval aviation reserves in an attempt to punish the Americans. A nuclear strike may be authorized against the air facilities at Keflavik though only cruise missiles will be available. Any use of ballistic missiles may precipitate escalation. Early destruction of the American carriers will avert escalation so time is of the essence.

"The Anglo-European War"

by Cass M. Johnson

SCENARIO INTRODUCTION

The EC was the first economic system to recover from the World Recession of the 90's. However, the advantage gained was short lived, with the US economic situation strengthening rapidly. European leaders understood that if the US was to regain its advantage in economics held since the Second World War, the European nations would continue to live under the iron fist of North American dominance. They decided things must change. When the complete ban on trade with North America was passed in the several legislatures of the EC nations, the world was aghast. In effect, the EC declared Cold War on America, and the results would be nothing short of destructive.

The war which followed, however, originated from an unusual direction. Great Britain refused to pass the non-trade agreement, and began unrestricted, even forced, trade with the United States. The US, quietly rendezvoused with British shipping in the mid-Atlantic and escorted the trade ships across the sea. The Americans knew they would be in a position of authority shortly, and chose not to rustle the European feathers until such time.

But, the Continental EC would have none of this. Demands of British acceptance

of the trade resolution were fierce, but unheeded. The French were first to respond. If the British would not freely accept the trade pact, they would be forced to adhere.

DESIGNERS' NOTES

Should the French complete the Charles de Gaulle carrier and the Rafale fighter, they would have an impressive platform combination. Combine a supercarrier with an aircraft capable of deploying a long range missile — much like the US platforms do on the oceans — and the result is nothing short of sea control.

However, unless the French completely load the carrier with Rafales, then problems may result. The new aircraft makes an impressive bomber and fighter, but none of the other carrier-borne aircraft in the French inventory do. So, when given the choice of loading the ANS or AAW weapons, which does one choose? Without an effective aircraft AAW screen, the French will have to rely upon the ship's defense systems. In Harpoon — and real life (in the short run) — these run out.

"Lend Lease 1994"

by Cass M. Johnson

SCENARIO INTRODUCTION

The Second Russian Revolution was not the last — most analysts knew this. The shaky economy the Yeltzin government inherited would not be easily fixed, and a people with new-found rights had a tendency to complain, even defy.

However, a disenchanted people was not the major problem. When high ranking military leaders decided that the new government could not manage the economy and ensure the survival of the Russian Federation, they acted. The Coup of 1994 was much better planned than its predecessor. There were no protests in the streets of Moscow, and the propaganda campaign which the military broadcast convinced much of the populace that perhaps the generals were right.

However, everyone did not give up, and when the northern regions of Russia began open conflict with the new government, the West responded with aid. The United States sent a CV Battle Group to the region, and eventually began conducting strikes in support of the growing Freedom Front. When the NSC agreed that troops should be landed to support the rebellion, the US leaders could not stop their plans with the damage of the CV. The landing must continue.

DESIGNERS' NOTES

When a CV is not available, one must use the assets available. A primary objective of any mission is suppression of air activity on the part of the enemy. Carriers are

great for this task. But when the bird farm has gone away, more conventional methods must be used.

In this scenario, the US forces have few air assets (they are there, of course, but in reduced number). What the US does have is TLAM's. Where do you use them? Against shipping which could normally be neutralized by Harpoons and other weapons? Or, where they were intended — air bases?

Choose wisely.

"Trade Barrier"

by Cass M. Johnson

SCENARIO INTRODUCTION

The rise of the European Community in the mid-1990's had a dramatic effect on the political and economic divisions in the world. Following the prolonged recessionary period which ran rampant throughout the industrial world during the early 90's, the EC was the first economic body to rebound, and the recovery was astonishing. What some felt was retribution toward the United States for "forty years of tyranny," the Community took steps to ensure that the Western Hemisphere took a back seat to the new world economic superpower.

Soon enough, the EC's actions against the United States and Canada led to dissension within the EC itself. Britain, still closely tied to its allies in the West, continued to ignore Continental demands to isolate the USA. Over the next several months a new alliance slowly developed between those English speaking nations of the world which retained close cultural links to the United Kingdom: Britain, Canada, the United States, New Zealand, and Australia, along with several smaller associates. The English Speakers Community, or ESC as it was named, though still somewhat weaker than the overly aggressive EC, began an assertive campaign to recapture the world economic market.

In the middle sat the Russian Confederation, replacing the dead Commonwealth of Independent States. Russia was a vast, untouched market for the goods of either alliance. The EC was first to initiate open trade with their one-time enemy. Unspoken agreements became the basis for the EC's demands that the ESC remain out of northern Asia. The Russians, however, began to feel trapped in bargains and understandings to which they had never assented. Moscow, dedicated to remaining neutral in the developing struggle between Europe and the West, announced it would send a "trade convoy" to America as a move to open new markets for its own goods.

The EC was furious, and announced that such a convoy would be in violation of

trade agreements. The move was seen as an affront to "Russia's European brothers," and that force would be used, if required, to prevent the West from receiving "European" trade goods. Russia's only response was silence, and a large military escort for the ships.

DESIGNERS' NOTES

Europe is a funny place. Now, don't get excited all you European Harpooners in the crowd. All I mean by saying this is that Europe has the most potential for muscle flexing, whether between individual nations or as a united front (i.e. the European Community) against "someone else."

There is such a vast collection of ethnic groups and cultures contained within that small continent that I am really not surprised that the two World Wars occurred in that area's front yard. "Culturalphobia" will always exist; it's a reflection of human nature to distrust someone who is different. Look at the United States. We have suffered, and continue to suffer, the same type of ethnic unrest, albeit on a smaller scale, as Europe has, and which Europe is now struggling through in ex-Yugoslavia and several portions of the ex-Soviet Union. Perhaps our turmoil will remain subdued?

But, with such a mix of cultural differences, combined with an attempt to unify them under one "community," all I see is a bottling up of aggressive tendencies toward one another. There has to be an outlet — somewhere. We have already seen in the last few weeks that many Germans, for example, do not like "foreigners." What happens when other historic enemies attempt to join forces? And what might occur when one community member decides to jump ship?

The future has always been a surprise, and the EC will in no way alleviate the mystery which pounces upon us as the years progress. But, we have seen that two superpowers in the world generally will not get along. Will the EC and the US be any different? After all, when it comes to economics, everyone is the enemy.

Oh, by the way, the Russians are the Blue, and the Europeans are Red. I did this because there are more European bases than Russian, and red shows up much better on the screen.

Alone in the Snow

by Delwin Hinkle

SCENARIO INTRODUCTION

Sweden's neutrality lasted only as long as the Reformed Russian Republic had no

need of anything that Sweden had and not a moment longer. The determined resistance of Norway's mountain troops, augmented by a battalion of the British SAS and elements of the United States' 1st Special Forces put the R3 theater commander behind schedule by 36 hours. Behind schedule has never been a comfortable place to be for a Russian Commander and this commander was determined to be uncomfortable only for a very short period of time.

His plan to get things moving again involved turning Norway's southern flank. But in order to do that, staging bases closer than Germany were required. Unfortunately for Sweden, bases that fit the bill were Swedish. The remaining life of Sweden's neutrality was measured in hours.

NATO wanted to provide assistance. The problem was, other than providing advance warning of the attack, NATO had nothing to give. The few remaining Norwegian F-16's could not be reoriented to cover Swedish airspace without leaving the northern FEBA vulnerable. CENTAF simply had no aircraft to spare. RAF operational reserves had been released to guard the northern approaches to the UK. The German air force ceased to exist as an effective fighting force 90 seconds after the first shots were fired. Combined chemical, biological and conventional missile, artillery and air attacks have a tendency to do that.

Although alone in the snow, the Swede's were not without hope. Sweden had been neutral. Sweden had not been stupid. Sweden's defense expenditures had increased from 2.9% of GNP in 1987 to 4.5% of GNP in 1996. A large portion of that money was spent on the procurement of Viggens, Sweden's latest mutli-role fighter aircraft. It was with the Viggens that this battle would turn.

DESIGNERS' NOTES

In theory, multi-role aircraft are the best thing for air commanders since sliced bread. Need air to air capability? No problem! Load up some of those radar guided wonders, a few heat seekers for good measure and a full load of 20 mike-mike just in case. Kick the tires, light the fires, and let's bag some bad guys. Got mud you need moved? Easy. Call up ordnance and get some Mark 82's on trailers. Let's make some history.

Practically, however, things are not so rosy. Logic alone tells you that a pilot that splits training time between two disparate mission types can never be as sharp in one given role as another pilot that trains only for one mission type. This problem is even more pronounced in the aircraft types that have only a single crew member.

From a command standpoint, the versatility of mutli-role aircraft also adds another layer of complexity to the decision making process. A wing commander with F-15C's doesn't have to worry about what role those aircraft will be needed for. They are air superiority all the way. That same commander with E model F-15's now has additional capability. He can still cover air to air missions, but in addition, he can strike ground targets. Not only must the commander make the proper threat analysis, he must also make the correct logistical choices to be sure that aircraft with the proper loads are available at the proper time.

Guardian

by Delwin Hinkle

SCENARIO INTRODUCTION

This Scenario is designed to be played from the Blue side only.

The events leading to the reformation of the old Soviet Union were numerous, anticipated by many, observed by many more, fatal for some and potentially deadly for the world. But famine, civil unrest, martial law and dictators almost always are. The Reformed Russian Republic was neither reformed nor a republic. But it was Russian. Very Russian.

Seventeen months after the Marshals disbanded the Politburo, shot the President and invited the Supreme Soviet to reconvene in a much colder climate, the military machine that had been built by paranoid fathers and leashed by older, misguided brothers was freed and pointed west. The time had come for the investment in tanks, ships and aircraft to be redeemed.

Since the initiation of hostilities on 4 Feb 1997, the R3 navy has enjoyed great success. Naval aviation attacks on Keflavik paved the way for a successful airborne assault. Andoya and Bodo in Norway soon followed. With newly liberated air bases allowing almost full coverage of the North Sea, the waters and skies north of England have become very unfriendly for Allied ships and aircraft. All of NATO's carriers and most NATO major surface combatants have been withdrawn to the North Atlantic to ensure the security of the sea lanes of communication. NATO command was willing to trade control of the North Sea for a period of time for a much better chance of getting the convoys of troops, tanks and munitions that CENTAG would require across the grey seas from America to Europe.

Protection of NATO's northeastern flank has fallen primarily to air power. Of the northern NATO bases, only Stornoway has remained in operation. NATO's other air bases have fallen victim to standoff attacks from the Keflavik Bears, Badgers and Backfires or to R3 surface action groups. NATO command's decision to redeploy the majority of US air assets to bases in southern England to better support CENTAG has left only the RAF. The Air Vice Marshall released the remaining reserves of the 41st Squadron and the 12th Squadron to provide tactical flexibility. A credible strike force could be mounted from Stornoway.

DESIGNERS' NOTES

What is the essence of command? The answer to this question has been debated for centuries around campfires, watering holes (of various types!), and military schools.

Although research has failed to locate a documented conclusion to this discussion, I would submit that the essence of command is decision making. The commander of any military unit is always faced with numerous choices within the context of achieving the operational mission of the unit. Each choice holds the seeds of both success and failure. The commander must decide, and must then face the consequences of those decisions.

With that in mind, it should come as no surprise that the command function has an insatiable appetite for information. The curious thing is that information is like an addictive drug. More information doesn't satisfy the informational need. The questions aren't answered. Rather, more information yields more questions, which increases the demand for more information. The challenge for the decision maker is in determining when enough information of sufficient quality has been delivered to allow a decision to be made. Choose too quickly, before enough information of sufficient quality has been delivered, and risk launching an attack into the face of murderous defenses. Choose too late, and the enemy reinforcements that were in transit are now deployed and waiting.

Plug the Dike

by Delwin Hinkle

SCENARIO NOTES

The success of the Reformed Russian Republic in Norway increased the importance of supply interdiction in the Baltic Sea. The logistical requirements of the R3 army were enormous. Tons of supplies attempted to transit the shallow waters between Denmark and Norway.

The threat to these small convoys was limited in scope. Because of the success of R3 airfield strikes, the NATO aircraft that remained had adopted a defensive posture, awaiting reinforcements. The few offensive missions that NATO launched were primarily offensive counter air and aimed at the R3 air bases. Convoys of five to seven ships were just too far down the list to merit much air attention.

The small missile boats of Norway, Sweden, Denmark and Germany performed in the opening days of the war exactly as had been anticipated. They ducked out of hiding, acquired targets for their Harpoons and Ottomats, launched their attacks and died.

R3 commanders used this opportunity to try and move small quantities of sensitive materials back to research installations in the East.

Only the submarines remain to oppose them.

Quiet and small, if employed correctly, they are very hard to detect. The departure of the front line R3 ASW units to the front as escorts for the R3 CBG's increased their effectiveness. Plugging the choke points out of the Denmark Sea provides the best opportunity to stop the transit of material in this area

DESIGNERS' NOTES

Another important portion of commander's job is honest assessment of the strengths and weaknesses of the assets that are available to be employed. One technique to help do this is to look at your forces from the perspective of the OPFOR commander and see which assets concern you the most.

Having determined your strengths, the trick now is to locate, recognize or create tactical situations that play to your strengths and avoid your weaknesses. In an ideal world, your strengths would also be the OPFOR's weaknesses.

Unfortunately, the real world is seldom ideal and your mission must still be accomplished.

"In Every Clime and Place"

by Mark R. Lam

SCENARIO INTRODUCTION

The war between the CIS and NATO has been raging for three weeks, with the CIS gaining the upper hand with their swift conquest of the nations that surround the Norwegian Sea. Gaining access to the Atlantic in this way, they have been able to sortie many hunter-killer sub groups, harassing NATO convoys and wreaking havoc with NATO's wartime plans. SACEUR has had enough, and finally convinces the USN to launch an amphibious invasion of Norway to stop the flow of subs that are sinking his supplies!

In order to pull off such a daring invasion, a CVBG is pulled from escort duty and ordered to soften up the air power that the CIS has built up in Norway. The USN also pulls together all of its newest ships in the 'Gator navy. Finally, the AV-8B Harrier II+ is embarked on the Wasp-class ships. This will prove to be it's debut in combat operations.

There is little time left for NATO. At the rate that the CIS subs are sinking convoys, NATO won't last another two weeks. This invasion must be successful!

DESIGNERS' NOTES

This scenario explores amphibious operations against a modern, well-trained opponent armed with capable equipment. While a carrier air wing normally is enough to dominate the entire world in Harpoon, it will be a bit busy dealing with the CIS SAG that the Blue player will not be informed about (surprise, surprise!) in his/her orders.

The Red side has an excellent opportunity to explore the usefulness of air warfare in the scenario. I included the best of modern CIS air power, so the player will be able to see how good it really is against US air power.

Naval Infantry

by Mark R. Lam

SCENARIO INTRODUCTION

The war between NATO and the CIS is in full swing, but neither side has gained an advantage over the other. CIS subs have done well against NATO shipping, but CIS ground forces in Europe have not matched the successes of their Naval cousins. The CIS surface fleet has been kept in reserve, the leadership knowing that NATO surface combatants are more powerful than they. Early on in the war planning, it was decided that the surface fleet would be used only on special missions and recalled as quickly as possible. While this theory goes against traditional doctrine, its advantage of keeping the fleet ready to respond to threats instead of sunk is appealing to many Admirals. Therefore, the brunt of the battle was borne initially by submarines.

That is about to change. While it's true that the CIS fleet is still floating, the folly of not using it has led in many ways to the current stalemate. To break the stalemate, CIS military leaders have decided to launch a two-prong invasion of Norway. This is called Operation Overpower. Naval air has sunk most of the Norwegian surface fleet, and no large NATO surface groups are near Norway, so the fleet assembles a huge amphibious assault force and puts to sea with heavy escort. The amphibious invasion is to coincide with an invasion from the border area. If Bodo can be taken and held for a week, the two prongs will link up and form a new threat against mainland Europe.

As for the Norwegians, they are caught in the middle. Their Air Force has been decimated and is nearly non-existent, and their surface fleet is gone. All that is left are three small submarines. While not much, it is hoped these three subs will be enough to discourage any further action from the sea.

DESIGNERS' NOTES

The RED side has a massive surface fleet, and on first glance it looks like this

scenario will be a pushover for the RED side. However, those Norwegian Diesel/ Electric's are stealthy enough to get the job done, and that's what this scenario examines. For the BLUE player, the priority will be to aggressively move those subs into position to deal a massive blow to the amphib force. For RED, this scenario is exactly the opposite. The air power is more than enough to destroy the base at Bodo, but that's not the point of this scenario. RED can win IF proper defenses against subs are taken. If not, this scenario will come to an abrupt halt for the RED side as ship after ship goes down in flames...

Baltic Breakout

by Mark R. Lam

SCENARIO INTRODUCTION

Instead of a peaceful transition in government, the Soviet Union instead undergoes two very violent, aggressive overthrows in one week. In the confusion of the change of government from communist to democracy and back to communism, controlled by military leaders, a general war is started against the NATO countries.

Two key naval units, though, aren't told in time. The Admiral Gorshkov and the Chernova Ukrainia are still docked in the Baltic shipyards. Though the whole world is caught off guard, the German Navy puts up whatever patrols it can. Most units are sunk in the initial attack, but once the situation was stabilized, a few subs and surface groups were able to take positions in the Baltic.

The two capital units of the Soviet Northern Fleet are caught between a rock and a hard place. They sail, knowing the hell that awaits them as they try to maneuver through the narrow striates between Denmark and Norway. Once free, though, there will be clear sailing to Murmansk, as the USN and RN aren't in position to do anything about it. So, the challenge is there. Are the Soviet ships up to it? ...

DESIGNERS' NOTES

This scenario studies the various units of the German navy, something that I've never seen before. Once again, diesel-electric boats might do all the damage, IF they are in the right place. The Soviet surface group should have no problem taking out the two small German surface groups, and control of the air will be disputed between a few F-4+ ICE Phantoms and the naval MiG-29s and Su-27s. Therefore, this scenario will examine the staying power of the German Navy and the sheer strength of two Soviet capital ships. Both sides know where each other is coming from, so there won't be much strategy in placing units. How the player and the computer employ their respective units will determine the winner of this scenario.

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by BI Hutchison

SCENARIO INTRODUCTION

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NACV BATTLESET

The Gap

by BI Hutchison

SCENARIO INTRODUCTION

Tensions have escalated rapidly since the announcement 3 days ago of an economic blockade of the United Kingdom by the Russian Navy. Soon after the announcement of the blockade, the British Prime Minister announced the closure of the Iceland, United Kingdom gap to all submarine traffic.

From the British perspective any campaign against the Russian Navy means protecting the sea lanes. Early in any conflict the responsibility of closing the Iceland, United kingdom gap will fall mainly on the shoulders of the Royal Navy. While the RAF has complete air superiority for the time being, ASW and ASuW operations are the sole responsibility of Royal Navy hunter-killer Groups. Protecting merchant shipping should be the number one task.

From the Russian point of view speed is life. Move as many subs south of Iceland and attack enemy shipping as fast as possible.

DESIGNERS' NOTES

This is a case study in sea lane protection prior to the establishment of organized convoy operations. From the British perspective the loss of these cargo ships could seriously affect the British economy.

No Air No Where

by BI Hutchison

SCENARIO INTRODUCTION

A state of war now exists between Russia and the UK The bulk of each aggressors naval forces have been mobilized and readied for war. Since hostilities have been conducted exclusively at sea, there appears to be little danger of escalation. Both sides feel completely uninhibited about attacking naval targets.

A Royal navy surface group has just completed rounding up a group of merchant marine vessels in route to the UK Since this operation takes place early in the campaign there is no land based support available.

From the Russian perspective things are on schedule. Forward deployed subs are in position and rogue surface groups are now working south of Iceland.

DESIGNERS' NOTES

From the British perspective, this is a classic escort operation with a decided ASW slant. Surface action is not likely though one should remain always vigilant.

From the Russian point of view this is a search and destroy mission, pure and simple. Attack and destroy any commercial shipping operating south of Iceland. Since the UK did not expect this blockade, their defenses have not yet reached the point of mutual support. Fleet assets currently deployed are forced to rely only on self-contained capabilities, creating more opportunities to attack in favorable conditions.

The Iceland Express

by BI Hutchison

SCENARIO INTRODUCTION

The Russians have initiated an amphibious operation against the north side of Iceland and are quickly advancing toward Reykjavik and the two battalions of U.S.

Marines holding the city. A British convoy bound for the port city has departed the UK and is now in route.

The Russian objective here clearly is one of isolation: stop the convoy from reaching the embattled Marines. A small but capable surface force should move to close the port facility and force the British into a surface action.

From the British point of view, this convoy must get through no matter the cost. A surface action is clearly going to favor the Russians but it may be a necessary evil. As always, expect the ASW threat to be high.

DESIGNERS' NOTES

The British are forced into the classic catch-22: sacrifice ships to support the greater good. Here we will examine the effects of a British carrier battle group engaging a clearly superior force to allow a second force to reach its objective.

Boomers

by BI Hutchison

SCENARIO INTRODUCTION

This scenario takes place late in the war. Things have not gone well for the Russians. As U.S. carriers are currently attacking the Kola Peninsula, most of the remaining subs deployed are attempting to break out into the open waters, making the allied command very worried since it may be a preliminary move before escalation to the nuclear threshold.

From the British perspective, sinking the boomers is critical to the survival of the free world. With very limited resources and a wide area to search, organization is the key to success.

The Russian President has ordered a first strike on the capitals of selected targets. This is expected to cause a cease fire on terms favorable to the Russian people.

DESIGNERS' NOTES

In this scenario we will examine the difficulties Russian SSBN's will face while deploying to their operational areas. These forces should be prepared to attack primary targets on receipt of a "go" order.

Since time appears to be running out, the British player should focus on the task at hand. Do not allow yourself to be distracted by targets of opportunity. Time wasted is gone forever.

The Second War Between the States

by Cass M. Johnson

SCENARIO INTRODUCTION

The Wilderness did not go well. The Confederate forces managed, though with great difficulty, to entrap the Union army in a ring of fire which closed in on the troops in an image of destruction unheard of previously in the War. The battle had an incredible impact on the population of the North. When mothers and fathers realized their sons had died under the merciless flames set by Southern hands, they no longer desired to keep "people like that" in their beloved Union. The peace treaty was shortly to follow.

But, in the end, both the USA and the CSA had the same national history, and similar desires, goals, and concerns. By 1875, a defensive pact was established between the two nations. Technology was shared and developed, the War soon became forgotten. Even the abhorred slavery issue died off with the development of technologies which led the institution of slavery into retirement. Machines could complete the tasks slaves had done in shorter times and without food and housing.

The continent of North America boomed. World War I came and went, Russia turned communist, and World War II left the world in ruins — except the USA and the CSA.

The shared technology system worked for both nations — until the USA discovered stealth technology. This, the northern nation decided, should not be shared. In the end, they thought, even the South might be a potential enemy. And, when the CSA learned of this violation of treaty, the South did, indeed, become an enemy. Obviously, there were issues unresolved in the last War between them. Such issues would be resolved now.

DESIGNERS' NOTES

Have you ever wondered how US ships would fare against US ships? I have. After hours of playing Harpoon, I've come to realize that if a US carrier was in the game, odds were it would decimate the bad guys. Not always, but if bets were to be placed....

Here's your chance to send your carrier into a battle where the other force is equally defended, armed, and escorted. Not all things are the same, of course; but you won't know what is and isn't until the battle heats up.

So, here it is. The mother of battles, the event of the century. In this corner,

weighing in at 95000 tons (plus accessories), wearing the Stars and Stripes, a US Carrier Battle Group, loaded to the brim — ready, willing, and able. And in this corner — well, the same thing, wearing the Stars and Bars. Choose your tactics carefully. The other guy has the same thing you do.

Watching Paint Dry

by Cass M. Johnson

SCENARIO INTRODUCTION

The Russians were fed up. Promises from the West to support the new Russian Federation under the now-removed Yeltzin proved both baseless and embarrassing to the Russian government. When the US and the EC in mid-1993 insisted that new economic and financial policies toward the Russian state would be forthcoming, the Russian military decided to wait on its planned rebellion. Several months later, however, everyone knew little would change in the West, which still mistrusted their large neighbor to the east.

The coup was quick and efficient. There were no protests, no gatherings at the Russian Federation center. Few of the populace even dared raise their heads in defiance — at least after the first two days of the coup. Democracy, for the time being, was extinguished in Moscow.

The effects were like dominoes, however. The wars of Yugoslavia intensified into the Balkan War. The Middle East flared into a major storm of conflict. And, the Atlantic was declared a shooting gallery by the Russian Provisional Government.

Now, the West needed to escort shipping across the ocean. However, the number of ships in the combined nations inventories was few, and many were currently on the seas. Against the rising number of Russian subs in the Atlantic, the West needed to locate the merchants on the seas and escort them safely to port.

DESIGNERS' NOTES

ASW is, both in the real world and in Harpoon, a pain in the neck. The most successful way to ensure that merchant traffic arrives at its destination during open hostilities is to provide escort across the ocean. This, however, can be incredibly draining on the platform inventory of the nations involved. Yet, it is a drain which cannot be denied.

Submarines, of course, have the advantage of finding a nice, cozy spot and awaiting the arrival of prey. To involve oneself in a "tail chase" against a merchant or other delight would turn the sub into, in short, a beacon. Therefore, one can expect the submarine to be lying quiet and calm, making as little noise as possible.

Develop good screens around those merchants. Their loss would signify a strangulation of Europe — or the United States.

Dr. Strangelovski"

by Cass M. Johnson

SCENARIO INTRODUCTION

"This kind of thing was not supposed to happen. There were safeguards, were there not, admiral?"

The admiral sat in silence. Of course there were safeguards, but, he shrugged, obviously not that safe.

"What have you to say?" the President asked.

"Comrade President," the fleet admiral began, "what is done is done. We cannot change these events. Admiral Protski has issued his orders, and we know the submarines will not heed the voices of our fleet — that is assuming we could even locate the submarine. They are not responding to recall via VLF communications."

"Then we either go to war or warn the United States."

"And Canada, Comrade President."

Pensively, the President reclined in his chair. His ideas were those of peace, not war. He could not go to war because one madman in a command position decided the world was a threat.

"I recommend, Comrade President, that we issue orders to all strategic commands. We have a head start, the Americans will not suspect."

"Have you considered the options and results, Admiral?" The President was disgusted with the man before him.

"Our loses would be acceptable, sir."

"No, admiral, I will not be the next Hitler. I have decided to warn the United States."

DESIGNERS' NOTES

Wait? I've heard this song and dance before, sort of, haven't I? In any case, this is the ASW scenario that leaves little option. You cannot afford to wait for the enemy

to appear. When those subs get inshore, they will fire. Their ordnance cannot be shot down, and their effects are complete.

The only thing you can count on is the range limitation of ballistic missiles. They must be fired beyond 100nm of their targets. The subs won't be fifty miles off. But, as an added assist, they won't be more than two hundred (about), also.

Find those subs. The east coast is counting on you.

Choke Point - Pig Boats

by Cass M. Johnson

SCENARIO INTRODUCTION

At first, the world considered the declaration of war nothing more than a formality — a joke. How could Russia successfully stage a war against Spain? Sure, the Spanish had vetoed the EC trade agreement with their large eastern neighbor, but they had their reasons. The problems could be evaluated and resolved. The declaration of war, though unnecessary, was somewhat understandable. In any case, the two nations were so far removed that nothing would come of the "war" — right?

The EC was completely shocked by the blitz the Russians conducted against the Spanish fleet. In only a few hours, the Iberian fleet ceased to exist, aside from a few patrol boats and one or two frigates. Did the remainder of the EC assist in the battle. Wasn't there a defensive agreement in the EC treaty? When Russia began assuring the EC that only the Balearic Islands would be the subject of the war, many European nations hesitated in joining the fray. The Russians were obviously angry and may actually invade the little defended eastern borders of the Community.

Britain, however, did not hesitate. Within an hour of the initial hostilities against Spain, Britain warned the Russians to back off. Then, a Russian amphibious formation was spotted moving toward Gibraltar. With no other nations assisting, Britain ordered what few subs it had in the Western Med to battle stations. Had the British not been conducting ASW and bottom contour mapping of the Gibraltar region, Spain would have lost the Balearic Islands. They might still.

DESIGNERS' NOTES

There are two distinct scenarios included in this, er, scenario. The first is CJSS1, which provides the British with nuclear powered submarines. The second is CJSS2, which provides diesel powered boats. Don't count on the submarines moving the same way, since I've provided sufficient alterations to confuse the situation.

What this does provide, however, is a short instruction on the differences between ASW against diesels vs. nukes. There are differences. Diesels are much more quiet. Your tails may not here them. What? No passive sonar detection's? Perhaps. You may have to conduct active sonar ops. Of course, this would then tell the subs where you were....

Good luck. Note the differences, and listen out for high speed props. Those fish have a bite.

Alpha Strike 1

by Delwin Hinkle

SCENARIO INTRODUCTION

This Scenario is designed to be played from the Blue side only.

As the tide of battle in the North Atlantic turned in favor of the NATO allies, it became clear that the lynch pin was Keflavik. Without it, NATO lost the ability to track R3 submarines as they sortied into the North Atlantic to interdict the sea lanes of communication. Without it, the convoys transiting those lanes lost raid warning and attrition capability on the Backfires, Bears and Badgers hunting them. With Keflavik, R3 gained a forward base for those same aircraft, extending their search and attack range thousands of miles further into the North Atlantic and making strikes on the CONUS a terrifying possibility. With Keflavik, in connection with the new R3 bases at Bodo and Andoya, the North Sea became the R3 Lake.

A single CVBG was tasked to set this situation straight. The Tomcats and Hornets, supported by EA-6B's and E-2C's from the carrier and EF-111's and E-3's from Stornoway in England, began the process by launching a series of combat air patrols centered 75 miles south of the main runways of Keflavik. Pairs of Hornets were positioned along the threat axis to loiter undetected and silent at very low altitude. Reacting as hoped, the R3 AEW aircraft detected the Tomcats and sent most of two squadrons of Flankers and Fulcrums up to play. As the R3 aircraft crossed the coast, the Tomcats loosed a volley of Phoenix missiles. Four dozen of the most deadly air to air weapons in history sped toward their destinies. The Fulcrums and Flankers were not unprepared for this event and began making defensive maneuvers and pumping millions of electrons into the air. These countermeasures were surprisingly successful. Just over half of the R3 aircraft survived. What they were not prepared for was the appearance of a dozen Hornets, each armed with fire and forget AMRAAMs. Only four of the Fulcrums and one of the Flankers made it back to the runways of Keflavik.

With the air threat eliminated, all that remains is to get the strikers on target.

DESIGNERS' NOTES

In the early days of Harpoon, the CVBG was the unchallenged as the queen of the seas. Attacking land based targets was simple. Cruise up to about 400 miles from the target, position a BARCAP of Tomcats at about 200 miles from the CVBG along the threat axis, load all of the A-6's and F/A-18's on board with Harpoons, and strike. Repeat as required until Red base is a smoking hole in the ground. (Harpooner's check list: Are there any Backfires up? Are my Harpoons on the way? Is life great or what?).

The problem was, this approach lacked any resemblance to reality. Upgrades to the game system have reduced the player's capability as real world limitations were modeled in the weapons systems (repeat after me: Harpoons kill ships, not runways.), but the "stand off & blast off" school of strikes still persisted.

As a real world students of tactics, let me suggest a few reasons why you cheat yourself if you adopt this approach. First of all, you ignore the logistical component of battle management. There just aren't that many stand off weapons in inventory! Second, you remove the command skill of designing the minimum sized package to get the maximum amount of effect from the equation. Third, and similarly, you remove the command skill of proper strike package design. Finally, you ignore the lessons of history.

But wait you say, Desert Storm was fought almost entirely with stand off and precision guided munitions. Remember all that video of laser guided bombs going down elevator shafts and through back doors. There must been hundreds of casualties from the reflected laser light alone!

Wrong. Thank you for playing...

In Desert Storm, less than 11.5 million tons of ordnance was of the laser guided variety. Some 288 TLAM missiles delivered 288,000 pounds of conventional explosives. 5100 Mavericks were fired, delivering no more than 1.5 million pounds of warhead and 7 SLAMS added 3,500 pounds. Grand total for these PGMs: less than 13.5 millions tons.
B-52's alone dropped more than 54 million tons of conventional munitions.

You see, the real lesson of Desert Storm was not that PGMs alone could inflict enough damage to achieve mission goals, but rather PGMs make it easier to get 12 A-6E's carrying Mk-82 500 lb slicks and Rockeyes to the target, easier for those conventional weapons to be employed effectively and easier, for those strikers to get home to fly again tomorrow.

The challenge of "Alpha Strike 1" is timing, pure and simple.

"Bill Bailey Won't You Please"

by Delwin Hinkle

SCENARIO INTRODUCTION

Outside pickets in NATO formations led short and violent lives in the first three weeks of the war. Loss rates on the Perry class led to the call up of all of the Knox Class frigates in the reserve fleet for escort duty.

CINCLANT's poker game only began with that move, however. As the Knox Class frigates formed up with the convoys or headed east in high speed runs to rendezvous with the CVBG's in the North Atlantic, the weak spot shifted to the coastal areas of the CONUS. Out of aces, CINCLANT did the only thing he could do. He bluffed with a pair of fives.

Shortly after the outbreak of hostilities, the Coast Guard's ships were integrated into the Navy chain of command and table of organization as a matter of course. Now, it was of greatest importance.

The Bear and Hamilton cutters began to try to cover for their younger, better equipped sisters. Both were small and very lightly armed. Only the Bear class carried a "tail," the towed array sonar system that made sniffing out lurking R3 submarines likely.

Their job was simple. Sanitize the port areas to allow the boomers safe access. The problem is that the simple things in war are often the hardest to accomplish.

DESIGNERS' NOTES

This scenario is the first in a group exploring escort tactics. Normally, when the topic of escort tactics arises, Harpooners think of "close escort": a formation of merchant ships with close-in AAW support from a DDG or a FFG and outer ASW support from another FFG or two. This convoy moves and maneuvers together toward the destination.

But other escort tactics are available, depending upon the characteristic strengths and weaknesses of the escorts and the items being escorted. For example, with fast surface units and lots of fixed wing ASW support, you might choose to sweep ahead of the convoy, prosecuting anything in its direct path, but ignoring contacts on the flanks, counting on the speed of the group to get them through before the safety gap provided by the sweepers closes.

On the other hand, given a number of shooters (both ASW and AAW), you might establish a safe corridor or lane from departure to destination. Then your convoys could make the transit trouble free.

In order to choose the optimum tactic, you must correctly evaluate both the threat

and the available assets

Finders Sinkers, Losers Swimmers

by Delwin Hinkle

SCENARIO INTRODUCTION

As the fast SLC ships that carried armor from Fort Hood across the North Atlantic from CONUS to England arrived, no one on board was naive enough to believe that their jobs were done. After all, tank and armored fighting vehicles were being destroyed at prodigious rates in Germany, and only slightly greater numbers were arriving at the east coast ports every day. Arriving only meant departing again. Empty, the SLC's were slightly faster and slightly less tempting a target for the R3 Backfires on Keflavik. Emphasis on "slightly" in both cases.

Nevertheless, the SLC's had to get home in a hurry.

"For I have promises to keep and miles to go before I sleep."

DESIGNERS' NOTES

This is the second of my scenarios exploring escort tactics.

As the commander must evaluate the nature and capabilities of his own forces and those of the OPFOR, so too he must determine the direction of the threat. Along this direction, termed the "threat axis", the commander must deploy his available assets to detect the threat and/or interdict the threat as it approaches.

As a result, the commander's job involves a constant cycle of force evaluation, threat evaluation and location, analysis of the current formation of his forces and adjustments to that formation to meet the threat.

As Blue, if you follow that cycle, you should be successful here.

A Stalk on the Cold Side

by Mark R. Lam

SCENARIO INTRODUCTION

The CIS has done very poorly in the war. Operation Southern Swath has failed to achieve its objectives after a brilliant start. The NATO navies had much to do with stemming the flow of CIS power by sinking all of the major surface ships in the CIS

Navy and preventing the two-pronged attack preferred by CIS war planners. However, unfortunately for Britain, NATO somehow forgot that the former Soviet Union's capital ship was not the Kalinin, the Gorshkov, or even the Kusnetsov. It was the submarine. In particular, the SSBNs that carried enough firepower to destroy all the industrialized world many times over. And so, in a last ditch attempt at winning the war, the CIS Navy sends out two boomers and the CIS leadership issues an ultimatum to NATO: cease hostilities and allow the CIS to retain control of the land it has conquered, or Britain will be obliterated. NATO has 48 hours to pull back and maintain the cease fire.

NATO is left with two options: submit to the ultimatum and allow the CIS to control most of the Arabian Gulf (and therefore the flow of oil out of it), or find those boomers and sink them. America has no forces nearby save a few SV22 Ospreys that are quickly ferried to Jan Mayen Island in the Norwegian Sea. Unbeknownst to the CIS leadership, the CIA has a highly-placed informant who managed to learn that the boomers were heading for the northern Norwegian Sea launch zones recently established by the CIS. The RN lucks out in that two SSNs are patrolling that part of the Sea. So, the stage is set. If the boomers are sunk, the CIS will acquiesce and surrender quietly. If they live for any amount of time, they'll receive their order to launch missiles at England. Once launched, there's no recalling those missiles...

DESIGNERS' NOTES

This scenario imparts the value of submarines to both sides. For RED, the stealthiness of the subs is paramount. They must survive for approximately 40 hours and then successfully launch their missiles against targets in England. Playing BLUE, the player will learn why the ultimate ASW weapon is another submarine. Both sides have ASW aircraft that could make the difference. Overall, this is an even scenario. I was very surprised at the results when I first playtested it. I eventually found the RED Typhoon, but I never found the Delta IV. The game ended in a draw, which was a surprise also.

Carriers Bane

by Mark R. Lam

SCENARIO INTRODUCTION

Following the rapid advances made in the initial stages of Operation Southern Swath, the CIS invasion of the Persian Gulf States, NATO scrambles to assemble a convoy of desperately needed supplies. This convoy takes a southern route from the US to the Straits of Gibraltar, as the convoy needs to pass through the Med.

The CIS leadership, however, anticipates this move and moves three Oscar II boats to the vicinity of the Straits to intercept this convoy.

The NATO convoy is totally disorganized at this point. The escorting carrier will be the De Gaulle, but she is out of position. The merchants and tankers have a pair of Arleigh Burkes escorting them as well as a pair of San Juan class subs, but the real escort is coming in from the north: a pair of Ticonderoga VLSs and more ASW forces. NATO must assemble this convoy on the move, something that's not normally practiced.

DESIGNERS' NOTES
This scenario examines ASW warfare against modern SSGNs. The RED player will have to be patient, because once the surface group is used it will probably be pounded on by the De Gaulle's airgroup. The subs should be used as the primary weapon to sink the escorts and the convoy.

BLUE will have to rush to get things done, and protect against a surface as well as a sub threat. This could be the De Gaulle's shining moment, or a disaster for NATO. The Oscar was designed to take out a US carrier, so the French carrier is very vulnerable (especially given the weak French AAW escort.) Once the convoy merges though, the tables are turned and BLUE will have the advantage. RED will then have to stealthily use all remaining assets to get the merchants.

MEDC BATTLESET

Nuclear Shell Game

by BI Hutchison

SCENARIO INTRODUCTION

With the collapse of NATO the Mediterranean has become a hot bed for conflict between neighbors and historic feuds have reemerged. In this collection of scenarios we will examine some of the tactical challenges these 2nd and 3rd world powers would face in their exploits.
The one assumption that underlies each of these possibilities is that the bulk of U.S. 6th fleet deployments are associated with a growing U.S. involvement in Bosnia-Herzegovina.

The Middle East Peace talks are in their 4th year and both sides are growing weary. The United Arab Conference is meeting in Cyprus to elect a new council. Iran, the major power player, is pushing a more aggressive and confrontational approach to the negotiations. The Israelis too have decided to adopt a more aggressive approach: Project Hercules.

The Israeli government has decided to launch a preemptive Nuclear strike on

Cyprus and decapitate the leaders of every radical state in the region and announce to the world that any nation or group of nations that conspire against Israel shall pay the ultimate price. The U.S. Navy currently has an escorted cruiser group working in the area and air defense around the target area should be considered high.

From the U.S. perspective this is a worst case scenario. The CIA has firm indicators that the Israelis are in the process of launching a Nuclear strike on the United Arab Council meeting in Cyprus. The only operational Air assets in the area are the battle group conducting support operations in Bosnia.

Turkey, after having evicted all U.S. forces from its territory, has openly declared its support for Muslim Rebels fighting in the Bosnian theater of operations, and has vowed to begin relief flights immediately.

DESIGNERS' NOTES

From the Israeli Perspective this is a jab and cover exercise. Protect the hot groups on the ground until the go order is received. Conventional strikes are authorized to suppress air defense and eliminate radar warning. Preparations for a U.S. response to the attack on their cruiser should also be considered.

From the U.S. perspective this scenario is a double-edged sword. Forces available must stop the Israelis from attacking Cyprus and stop the Turks from resupplying the rebels.

The Road To Epirus

by BI Hutchison

SCENARIO INTRODUCTION

The Italian government, with the implicate approval from other Mediterranean powers, has begun landing forces in Albania under the pretext of calming civil and ethnic violence.
The Greek government, claiming Albania as Northern Epirus, has ordered the Italian government to cease and desist all military operations and withdraw back into international waters. Like Roman gladiators of old, both combatants have entered the arena: and the circus has begun.
In the opening phase of conflict between these two countries the air battle was fought to a stalemate. Both sides have withdrawn all major air elements though some shore based helicopters may be available. The next phase of combat, simulated here, is sea control conducted by surface forces. Since neither side possesses an advantage in the sensor war this will be much like a World War II engagement using missiles only, instead of guns.

From the Italian point of view, control of Albania means control of access in and out of the Adriatic, a valuable commodity worth fighting for. The beachhead is secure on the ground but the Greeks now present a completely new threat: fleet opposition. With no AEW network and limited surface search capability, a static defense of the beachhead is required.
From the Greek perspective the task is somewhat simpler, as the approximate location of the enemy fleet is known. The key here is to attack effectively first.

DESIGNERS' NOTES

The main tactical principal here is defense through superior scouting. If the Greeks manage to get targeting solutions on the landing ships they will be able to overwhelm the SAG's air defense capabilities and destroy most of the ground forces before they can be off-loaded. Smaller platforms operating as a radar picket should provide adequate warning of an attack against Italian capital ships. The few Harriers available to the Italians should be used to defend the force from roving helicopter attacks.

From the Greek point of view this is an all out attack. The approximate position of the enemy forces is known so all available forces should be organized into attack waves and attack as soon as possible. Land based helicopter assets should be used to soften up Italian air defenses.

Tripoli Assault

by BI Hutchison

SCENARIO INTRODUCTION

Colonel Quadfi has renewed his attempts to conquer Chad and capture the uranium mines. What makes this operation different from Libya's past activities is the commitment of such a large portion of her air force. France has pledged to support the Chad government and has ordered the Libyans to withdraw or face the consequences.

France is the aggressor in this scenario. The President has ordered a raid on Tripoli by foreign legion units. While no one expects the legionaries to hold Tripoli long, it will force Quadfi to withdraw units from Chad in defense of the capitol.

Libyan forces will focus solely on defense of the capitol. A defeat of the French navy in the Gulf of Sidra should produce the effects in Chad that the Colonel wants with the added benefit of elevating him to a status not held since Saddam Hussein stood up to The United States

DESIGNERS' NOTES

This scenario will examine the difficulties that a French battle group commander would face in mounting a power projection mission outside the range of land based air support. For this scenario the French will have a limited number of Rafales available.

Although numerically superior, the Libyan navy is definitely out-classed. The only advantages the Libyans have are land based reconnaissance and air superiority. A good tactician should be able to use these advantages to overwhelm the technological superiority of the French. Careful planning is required.

Commerce Commitments

by BI Hutchison

SCENARIO INTRODUCTION

Russia has come to the aid of Libya in this scenario as French forces attempt to withdraw to home waters. A large Russian convoy is in route to Tripoli with enough supplies to guarantee the success of the Chad campaign. The French government has declared a blockade of all Libyan ports and a quarantine against military equipment. Russia has guaranteed delivery and has signaled that any attempt to stop delivery will have severe consequences.

From the Russian perspective this is a convoy operation, pure and simple. Deliver the goods and collect the money, that's what the Russian navy is all about today. Escort the cargo ships safely to Tripoli and guard them as they are unloaded.

France has different ideas. Knowing that this conflict has no real potential for escalation to the nuclear threshold, France feels free to engage the red navy in surface warfare.

DESIGNERS' NOTES

This scenario will examine the principles of 2nd line carrier warfare. While the French enjoy the advantage of more decks and aircraft. The Russians definitely have the advantage in surface strike potential and reconnaissance with indigenous AEW and RECON platforms.

The French mission is to stop the cargo ships from being off-loaded, any distraction from that mission will surely lead to defeat.

The Russian tactic is simple: standoff warfare - don't let the enemy come close enough to hurt you.

Holy War

by Cass M. Johnson

SCENARIO INTRODUCTION

The war in Yugoslavia between the Serbs and Bosnia had become both an irritant and embarrassing to the EC nations. The remainder of the world looked on in amazement. The Western powers would reach halfway across the world and beat back a hostile Iraqi army, but do nothing in their own back yard. So, the Gulf War was only because of oil, hum?

To quell world outcry and accusation, the EC unilaterally agreed upon an outdated and no longer acceptable Bosnia Peace Initiative. The Bosnian nation would cease to exist and fall under the complete administration of the EC until it could be divided appropriately to the other warring factions. There would be no discussion, this was how the Europeans decided the war would end.

Of course, the Bosnians hated the plan. Not only would their nation be disestablished, but their future was in the hands of northern neighbors who could really care less about their plight. And, the Serbians hated the plan, primarily because they would be unable to capture two strategic Adriatic cities now within reach. In addition, the Europeans never expected the other opposition to the plan. The Moslem world hated the plan because, as always, they saw a European domination of a Moslem nation.

The result of the hasty and thoughtless plan was a Med-wide war. Yet, as bureaucracies are wont to be, the operation would not be halted. Instead, there were simply a few more hurdles to jump.

DESIGNERS' NOTES

If played correctly (as indicated in the orders), the Europeans will have an interesting time conducting themselves in this scenario. In the real world, if hostilities are not officially declared, one never knows who the actual bad guys are until they shoot. This is how this scenario should be played (as the European side).

Don't simply shoot at anything that moves. If it is Red, don't assume it is hostile (of course, we KNOW it really is in Harpoon). Let each individual formation "declare war" before you fire upon it. But, be careful of those submarines. It is hard to link them with a specific nation unless they surface and start waving a flag. Don't expect this.

Try not to let your trigger finger make your decisions. If you play this correctly,

you'll get more of a feel for what the naval commander at sea actually goes through when underway in a hostile zone.

Israeli Defense

by Cass M. Johnson

SCENARIO INTRODUCTION

As before, a potentially hostile nation had developed a breeder reactor system would could, eventually, provide that nation with nuclear-grade material. The Israeli command authority was convinced that the reactor would soon become a threat to Israel's national security. Steps must be taken.

At Benina, Libya had nearly completed the production of a power generator which would finally provide the nation with the ability to deal forcefully with nations. Under the watchful eye of the United States, the breeder reactor had been completed without discovery. At least, this is what was thought until an Israeli agent was discovered taking photographs of the facility. Although that agent was unfortunately killed, Libya knew there must have been others who escaped detection.

The reactor must not be lost, and Libya knew from the past that Israel would take steps to eliminate the facility. To preempt possible response, Libya moved several squadrons of aircraft to eastern bases, between Israel and Benina. In addition, the fleet would be placed between Israel and the reactor. The ships would serve as forward spotters for possible aircraft attacks from the anti-Arab nation. Israel would not win, and would probably be the recipient of the first operational device in Libya's inventory.

DESIGNERS' NOTES

Neither of these nations has anything similar to a carrier. But, by the same token, if a mission of this nature were to be conducted by Israel, control of the seas would be required. It would be imperative to protect the Israeli shoreline, and also to prevent Libya from spotting aircraft well beyond air base radars. Therefore, Israel must send surface platforms out to control the seas between the potential target and the homeland.

Since the best either nation can must by way of surface combatants is a frigate, the sea battle would prove to be interesting, perhaps even prolonged. Against a supercarrier, neither of these fleets would last more than a few hours (should full scale war break out). But, against each other, the results would prove to be interesting.

Be careful of the one wild card both nations possess: submarines. One sub can ruin

even the best laid plans.

Roman Phalanx

by Cass M. Johnson

SCENARIO INTRODUCTION

Following the Arab-Israeli War of 1993, several of the Islamic nations in Africa and the Middle East expanded their militaries in order to enhance their spheres of influence in the economic and political arenas around their borders. One of the leaders in this movement was, not surprisingly, Libya.

As Libya's military might grew, so, too, did its self-perception. Similar to earlier moves in the 1970's and 1980's, Tripoli claimed exclusive control over the Gulf of Sidra and denied entry into these waters to all foreign military forces. The United States, though maintaining a smaller regional force in the Mediterranean, immediately sent a task group into the claimed seas. Libya, still recovering from the last US attack in the 1980's, ignored the American presence. However, when Italy, interested in promoting its own importance, entered the Gulf, Libya responded.

Libya's first aggressive action was to shoot down two Italian P-3 Orion aircraft which had been flying recon missions over the Gulf of Sidra. Tensions between the governments of Rome and Tripoli quickly deteriorated. Arguably, Libya's actions were understandable, possibly warranted, since Italian forces had persisted in harassing Libyan naval and air units in the Sidra region days prior to the offensive response.

Italy, however, was not to be undermined. Aware that Libya's advanced weapon program was soon to be completed, and also cognizant that a final shipment of cargo required to finish the project was en route to Bengasi, Italian leaders decided to retaliate by intercepting the cargo ships carrying the weapon component shipments.

DESIGNERS' NOTES

Despite the fact that most every combatant above light frigate is equipped to carry air assets (i.e., helos), these ships do not always embark air crews or units (except, of course, carriers). With the US Navy, and probably other nations as well, there just aren't enough helos to go around. Therefore, rarely will a Perry class frigate carry two helos, if even one.

Now, I admit that when on deployment ships are often provided one helo, especially ships that will conduct ASW operations. But, one helo doesn't allow for down time, repairs, and other reasons which prevent a helo's operation. Therefore,

sometimes air assets will not be available to "scout out" the regions beyond the horizon.

What do you do then? With no helos to provide long range surface detection, surface tracking, or extended range ESM, a formation could be blind to the presence of the "enemy." Your forces could pass a formation at 20 miles and literally never know the other guy is there. A battle could be won — or lost — because of this.

Interested? I was, and set about designing this scenario. I understand that a situation where absolutely NO helos were available would be rare, if even quite improbable. So, I added a couple whirly birds, more to the Red forces than Blue. Otherwise, your ships are on their own.

Good luck!

Alpha Strike 2

by Delwin Hinkle

SCENARIO INTRODUCTION

This Scenario is designed to be played from the Blue side only.

As the Serbian Civil War reached it's fifth anniversary, the UN's decision to withhold ground troops continued to be widely debated. Although the addition of US air power was welcomed, alone it was insufficient to turn the tide. The groundpounder's axiom that "Air power alone cannot win a war. No airedale ever has or ever will be capable of taking and holding an acre of dirt." continued to stand the test of battle.

As a result, the Serbian Civil War was not so much a civil war as it was a thresher of human bodies and spirits. Small battles ignited and then smoldered throughout the area. There simply was no "forward edge of the battle area". For each individual the FEBA was where he or she stood confronting the enemy at one particular tick of the clock. Humans were fed into one end of the thresher and the chaff of broken bodies, broken minds and human souls was discharged from the other.

Of the US military services with aviation capability, the Air Force had no interest in the kind of missions required here. None were high, fast or stealthy. The A-10 Warthogs would have been ideal had any remained in service. The confining waters and the mission profile of close air support turned the Navy off almost as fast. For a dirty knife fight in the close confines of a dark alley, only the Marines had the know how, the equipment and the enthusiasm for the job. "Aye aye, sir. Semper Fi!" was their response.

DESIGNERS' NOTES

Alpha strikes against targets with little or no fighter cover, as we explored in ALPHA STRIKE 1, are complex and focused primarily on timing. Alpha strikes against targets that have fighter cover are more difficult by an order of magnitude. Timing is even more crucial, and co-ordination between the various elements of the strike package are even more important and difficult.

To provide one more twist, this scenario is staged not with the majestic centerpieces of Naval aviation, the supercarrier, but rather with a helicopter carrier and its Marine air wing.

Don't despair, for although the Marine carriers may not employ the long range epees of the mighty Tomcat or the multi-role sabers of the Hornets, their daggers, the Harriers, are just as deadly if the circumstances are right.

Missile Boats at Dawn

by Delwin Hinkle

SCENARIO INTRODUCTION

No nation in the Middle East, and perhaps not nation in the world, has a more effective intelligence service than the Israeli Mossad. Quiet and effective, they search out potential problems and deal with them. On occasion, the things they discover are of such magnitude that assistance is needed from other arms of the Israeli military.

Such was the case in mid February, 1997.

Through the work of a single agent, the Mossad learned of the completion of a quantity of chemical and biological weapons in Libya. These agents of mass destruction were to be transported to Egypt. No target had been ascribed to the weapons at this point, but the Prime Minister was a cautious man. An "accident" was to be arranged for the shipment.

DESIGNERS' NOTES

If you play Blue, this is a look at escort tactics from the perspective of the attacker.

The basic principles have not changed, however, and only one additional step has been added. First, you must find the escorted target.

Deadline

By Delwin Hinkle

SCENARIO INTRODUCTION

This Scenario is designed to be played from the Blue side only.

The "bolt from the blue" struck Israel just after 4 a.m. on Saturday morning. Syria and Libya joined together to, as their official diplomatic statement read, "rid the Earth of the selfish, lying, greedy, criminal state of Zion for all time." Egypt and Jordan officially denied any direct involvement or any foreknowledge. These denials were afforded the same level of credibility as the follow up statements which claimed that "technical difficulties" had prevented the detection of the waves of aircraft passing over Egyptian and Jordanian airspace on the way to targets in Israel.

No empty threats this time. The full weight of Libya's chemical research was directed at the air bases of the Israeli air force. The first wave of chemical attacks did little military damage, as most personnel had enough warning to protect themselves. However, the goals of these attacks were different and they were achieved.

First of all, the chemical attacks hit the civilian population hard. Hundreds of thousands died in their beds. Scores more survived long enough to get into their cars and clog the streets and highways before they died. Just getting to their bases became a significant challenge for military personnel.

Secondly, the persistent nature of the chemical agents severely impeded the Air Force's ability to re-arm, re-fuel and launch aircraft. Turn-around times quadrupled.

Thirdly, the psychological impact of the nature of the attack blunted the razor edge of the pilots. Many knew their families were dead. Some could handle the blow, retreating to the role of a professional soldier to cope. Others could not.

The end result was that the first wave of chemical attacks paved the way for the second wave, consisting of conventional strikers. escorted by MiG-29's and SU-27's. Offensive counter air missions launched by the Syrians and the Libyans focused on sweeping the Eagles, Falcons and Kifrs from the skies. Mob tactics were used, and even the best Israeli F-15 pilot could hope to survive for only minutes facing five, six and even seven to one odds.

With their air cover gone, the attack aircraft of the Israeli air force, many with engines turning waiting for a pilot to strap in, were decimated on the ground.

Left alone, there was no question that the nation of Israel had only hours to live. The problem was, that everyone was sure that Israel would not go down without

playing her final trump. Faced with annihilation, Israel would cross the nuclear threshold. Israel would not go quietly into the night.

DESIGNERS' NOTES

The military commander's job always involves politics, sometimes internal service politics, often external national and international politics. The courses of action most appealing to a commander from a tactical perspective in a combat setting may be precluded by the politics of the situation. In "Deadline", as the US commander, your mission is simple: protect the transports, get them to Israel and protect the Israeli air bases.

From a tactical perspective, escort tactics are escort tactics and the same basic rules apply: identify and evaluate the threat, evaluate the capabilities of your forces regarding the threat, honor or neutralize the threat.

Good luck.

Black Sea, Black Hole

by Mark R. Lam

SCENARIO INTRODUCTION

Operation Southern Swath is in full swing and going well for the CIS. In the Med theater, CIS air power has dominated, with Turkey being defeated by a combined amphibious invasion and air onslaught. The only Turkish units that survived the initial air campaign were those underway and not in the Black Sea. Eventually, most of these vessels ended up in Italian or French ports.

After two weeks of sitting on the sidelines, the Turks are ready to get back into the fight. To do this, they have decided to send two SS boats back into the Black Sea to generally harass the CIS Navy and perhaps gain some intelligence on the disposition of the CIS Med Fleet.

The CIS Navy is confident of it's control of the Black Sea, but still conducts a few coastal patrols. Unfortunately, none of them picked up the SS's entering the arena. Moving through the Aegean was tough, yet accomplished with professional excellence. The subs are ready for action.

DESIGNERS' NOTES

I've always wanted to play with the so-called "Coastal Patrol" ships of the CIS Navy. This scenario will examine their effectiveness against two Type 1200 boats. For the RED side, that goal is simple: sink the subs. For BLUE, the subs are

vulnerable in that they have to approach the three bases (according to their orders) and therefore will be in shallow water, making the area the coastal patrols will have to cover smaller.

Contested Passage

by Mark R. Lam

SCENARIO INTRODUCTION

Mumar Khadafi, tired of not being in the press for the last couple of years, has secretly devised a new terrorist attack against the US. Instead of going after civilians, though, Khadafi decides to target the US military in some fashion. He does have enough sense left to realize his Air Force would not be a good device to use (he studied the air war during Desert Storm and came to the correct conclusion that US air power was vastly superior to his.) However, he does have a Navy that, while not longlasting, might be able to deliver a sizable punch to an unarmed ship or two. So, with the use of his Navy in mind, Khadafi bides his time, waiting for an opportunity.

The US Marine Corps unwittingly provides him with one. Libyan intelligence soon learns that the Marine Corps. will be participating in an exercise with the Egyptian Army. The troops will be transported on four merchant carriers. Escort is deemed to be light.

Also exercising in the area, unbeknownst to Khadafi (all his ships are in port, and his air force is grounded to avoid suspicion that he's up to something), are the six Pegasus-class hydrofoils of the USN, acting as targets for an avionics test being conducted by the new F/A-18E Hornets based at Decimomanuu.

Khadafi decides to hit the merchants when they leave the exercise, figuring that the Marines' guard will be a little less alert. The small merchant convoy sails from Mersa Matru, and the Libyan ships leave port at roughly the same time...

DESIGNERS' NOTES

There are no real operational lessons in this scenario. Tactical lessons, though, abound. First, there is the examination of how well the PTM's will do against the gunboats of the Libyan navy. Second, assuming some of the gunboats get through the PTM's (and they will), the defense of the merchants will be left to the airgroup of the Wasp. In the orders, the player will be limited as to what loadouts he/she can arm the Harriers with. The third lesson will be in ASW against the Libyan Foxtrots. Granted, this should be easy, but I never heard them...

IOPG BATTLESET

The Gulf of Doom

by BI Hutchison

SCENARIO INTRODUCTION

Tensions in the Persian Gulf have escalated rapidly since the fall of Saddam Hussein and the Iranian invasion of Iraq.

Saudi Arabia, clearly intimidated by it's new neighbor, has denied the U.S. access to military installations in the country. The current U.S. administration has decided to remove prepositioned assets docked in Kuwait to eliminate any temptation their presence may present to the Iranians.

Forces currently operating in the Persian Gulf are suddenly at a much higher risk than before the invasion. They should be removed as soon a possible with air cover being provided by a sea control force operating just outside of the Gulf.

From the Islamic point of view the best time to kill a snake is when it's small. There can be little doubt that the equipment loaded in those positioning ships will most certainly be used to kill Arabs.

DESIGNERS' NOTES

Defending a convoy at long range in a moderate threat environment will pose some unique challenges to the task group commander.

Sea Control

by BI Hutchison

SCENARIO INTRODUCTION

With the consolidation of power in Iraq by Iran, the U.S. has been forced to recognize the emergence of a new regional power. After the sudden withdrawal of U.S. assets from Kuwait the Kuwaitis are very nervous. In an attempt to quell their fears the President has authorized the reflagging of all friendly tankers, and guaranteed a right of passage in the gulf.

Iran for their part has turned up the heat by imposing an extremely high toll for passage through the Straits of Hormuz, which they now claim as Iranian territorial waters.

Sea control forces operating in the theater have a two-fold mission: 1) protect all the tankers operating in the gulf. 2) conduct limited strike operations to suppress Iranian offensive forces.

From the Iranian perspective, closing the gulf to commercial traffic will give them control of the western economies and ignite the Islamic fires around the world.

DESIGNERS' NOTES

Here we will examine the performance of sea control forces in a multi-mission environment. Since the Iranians do have a couple of Kilo class subs, ASW operations should not be neglected.

Silkworm Surprise

by BI Hutchison

SCENARIO INTRODUCTION

Hostilities with the Iranians have been escalating at a rapid pace. With the sinking of several re-flagged U.S. tankers, the President has been forced to go on the offensive. With Oman bowing to growing pressure, the President has now ordered the immediate removal of all forces in the country.

Offensive operations against the listed military targets should send the appropriate message. Since sea control assets do not have enough striking power for this operation, a force of six B-52's will be available at Diego Garcia. Iranian operations should center on the evacuating U.S. amphibious group operating off the coast of a now hostile Oman.

DESIGNERS' NOTES

This is a multi-task operation centering on major coordinated strike operations. Defense of the Phibron should also be planned carefully as it's destruction would surely be reason for the Iranians to claim victory.

Surprise, Surprise!

by BI Hutchison

SCENARIO INTRODUCTION

This is the worst case scenario for Middle East affairs. With Iran now in control of the majority of the world's oil, long silent Russia has announced a mutual defense treaty and has vowed to help protect the gulf for their Arab friends.

U.S. forces find themselves in a very hostile world a very long way behind enemy lines. With the Russian declaration, all Russian forces operating in the area should be considered hostile. Of primary concern here should be the sub threat. All American forces should make best possible speed for Diego Garcia and the safety of U.S. controlled air space.

From the Russian perspective things could be much worse. A long time Russian goal has been completed without firing a shot: that being the eviction of U.S. forces from the Persian Gulf. To stop any future offensive plans the U.S. Navy may be ordered to attack and destroy the amphibious group operating in the area.

DESIGNERS' NOTES

This scenario puts the U.S. in a very unfamiliar position, that of air inferiority in a carrier battle. This weakness could be multiplied if the Russians can win the sensor war. This scenario will stretch the sea control concept to it's outer limit. Survival in this environment would surely vindicate the theory and prepare the U.S. Navy for life in the ever changing 21st century.

Hormuz

by Cass M. Johnson

SCENARIO INTRODUCTION

Each time Saddam Hussein pushed the United States following the Gulf War, Iraq became just a bit weaker. In turn, each response by the US against Hussein made the Iranian armed forces look stronger. After numerous "incidents" between the US and Iraq, the Iranian government decided the time was ripe to act.

The Second Iran-Iraq War was short and decisive. The weakened Iraqi army initially thought the United States and Britain were attacking them again, and the troops immediately abandoned their positions and armored vehicles. The Iranians rapidly took possession of these items. The West, likewise, was caught off guard. As before, intelligence sources failed to anticipate such a reaction, and before the West could unify its warnings, Iran had captured Baghdad. When the Kuwaiti and Allied forces in Kuwait nervously and prematurely fired upon the Iranian armies which staged themselves along the Kuwaiti border, the door was opened for Iran to take that oil-rich nation as well. The result was an Iranian controlled Gulf and a shaken Allied defense.

Although Iran made no motions toward the Saudis, the Allies were going to take no chances. They began mustering the pre-Gulf War alliance again, and Iran immediately considered such actions potentially hostile. The only response Iran could take was to attack convoys entering the Gulf. This might result in full scale war, but what choice did Iran have?

DESIGNERS' NOTES

This is a plausible situation. The Middle East is, if nothing else, a proverbial can of worms. Even now as we, the Alliance nations, continue to threaten and punish the Iraqis for challenging our edicts on troop placement and flights in the Iraqi airspace, that nation becomes weaker. Add to this the complete hatred Iran has for Iraq, and vice versa, and — voila! this scenario becomes the real thing.

As we saw in 1991 during the Gulf War, the time requirement for a build-up of forces in the Gulf region is extraordinary. Amazingly, Iraq didn't take the opportunity and attack Saudi Arabia when the Alliance was still weak. Would Saddam do so now if he had the opportunity again? Better yet, would Iran, in this instance, knowing what would happen if the allies were allowed to complete the build-up?

In the end, sending equipment to the Gulf can only be done quickly via shipping. Air transport is slow in placing LOTS of equipment in a short time. In addition, can tanks be dropped on the west coast of Saudi Arabia and be expected to be driven or transported across the desert? Perhaps, but placement on the front line via shipping is probably the most efficient. You, as the US, will answer this question by either surviving the Hormuz transit or perishing. Your career is on the line.

The Sri Lanka Incident

by Cass M. Johnson

SCENARIO INTRODUCTION

The time has come for Indian domination of the INDIAN Ocean. The Western nations have, for the most part, scaled down their presence in the region after the economic crunches of the early 90s. The result is an ocean region awaiting the domination of the most appropriate leader in the locality.

The first stage of the operation was the conquest of Sri Lanka. This stage took little effort, and the outcry by natives was weak, if not non-existent. As India prepared to move against it's historic enemy, Pakistan, the British decided to nose into the regional situation. The UK demanded that India remove itself from their island neighbor. Of course, the demand was ignored—until the British and the Australians moved amphibious forces into the region.

Now, with expansionist goals on hold, Indian must prepare to fight the British for Sri Lanka. India would never submit to the European demand. It was time the British learned their empire no longer extended into this region of the world.

DESIGNERS' NOTES

India has publicly proclaimed its intention on becoming the SOLE superpower in the INDIAN Ocean. Whether this threat is real is not readily apparent — at the moment. However, the next few years may determine the reality of this situation, especially once the world drags itself out of the current economic crunch.

Assuming the proclamation is truthful, the first stage of India's strategy would be to capture any adjacent nations which may become bothersome. Although Sri Lanka has been under the influence of India on and off for years, India would be sure to make the island nation a full province shortly after the push for domination began.

Who would respond? The West is not now responding to the Bosnian War; would it respond to a Sri Lankan War? Maybe, maybe not. But, let's assume the British would at least respond since Sri Lanka falls under the commonwealth of Nations (sort of).

Britain against India. Probably more realistic a future than one might expect.

Brown Water Transit

by Delwin Hinkle

SCENARIO INTRODUCTION

This scenario is designed to be played from the Blue side only.
Unlike the United States and Canada, neighborly relations between India and Pakistan have a distinctly cold feel. India's goal to be the dominant regional power is not a secret to the other nations of the area. Of course, a fleet of submarines, three aircraft carriers and a nuclear weapons program communicate intentions without the need for words.

Unable to afford the quantities of conventional weapons systems to constitute an effective deterrent, Pakistan has turned to devoting a growing percentage of its defense spending toward the development of nuclear weapons.

Assuring safe passage for the materials required for this program is one of the highest priorities of the Pakistani armed forces.

DESIGNERS' NOTES

This scenario represents my attempt to distill the essence of ASW escort tactics into as simple a setup with as few platforms as possible. Your goal is simple: transit the merchants safely.

Your choices are limited, but not as simple. You may choose to speed your escort force to link up with the merchants before they strike out, or to operate the two groups independently. You may use the air ASW to clear a corridor, or to provide close-in support.

It is said that a journey of a thousand miles begins with a single step and that is true. One of the first steps here is to choose an overall approach. Watch that first step, friend, it can be deadly.

Demise of the 7th Fleet

by Delwin Hinkle

SCENARIO INTRODUCTION

The budget crisis of 1995 in the United States was not pretty. Interest rates once again crossed the 20% line. The US Treasury was finding it increasingly difficult to refinance the short term debt used to fund prior budget deficits. GNP was up and so were taxes, but not enough. Uncle Sam faced a liquidity crisis.

Taking inventory, trying to find something that others might want that we had that could raise significant cash, Uncle Sam was very disappointed. The transformation of the US economy from a manufacturing to a service based one was almost complete. Of all the products manufactured in the world, only in one area did the US still excel. That area was military hardware: ships, airplanes, tanks and other weapons systems. With the demise of the Soviet Union, US hardware was without question the best in the world. Our lead was so great that some of our newly obsolete equipment was better than 90% of that employed in other regions of the world.

Earlier attempts to control the budget problem by reducing the defense budget by cutting the number of active air force squadrons, navy aircraft carriers, escorts and air wings produced a significant inventory of second line equipment. Uncle Sam's military garage sale was open for business.

All the Uncle needed was customers. Customers with lots of cash. Two groups stepped forward. The moderate Arabs, led by the Saudis brought a history of arms transactions with the west and bags of petro-dollars. The Eastern Oriental Prosperity Sphere, led by Japan and Korea brought dollars earned in manufacturing and finance.

Marriages made in heaven can, however, turn into divorces from hell.

Contention over oil prices and supply have left the US staring down the barrel of a loaded Saudi gun. A gun of our own manufacture with bullets of our own design. For the first time in more than fifty years, US naval forces were faced with a threat that was only marginally inferior to their own. The capabilities of men, not their machines would decide this battle.

DESIGNERS' NOTES

The rationale behind this scenario is simple. Let's see what happens in a fair (or nearly fair) fight.

Tactically, as the commander of the blue forces, you could hardly be placed in a worse position. Almost surrounded by opposing forces of almost equal capability and greater numbers, you must evaluate your situation quickly and then take rapid action.

The Hindu/Muslim War

By Delwin Hinkle

SCENARIO INTRODUCTION

This scenario is designed to be played from the Blue side only.

The acrimony between Hindus and Muslims is long standing and has boiled over into open conflict more than once in this century.

Geographically, Pakistan was simply too close with too little conventional arms to stop the attack by India. Smuggled truck bombs were detonated in the centers of power of Pakistan two minutes in advance of the attacks. These advance strikes separated the Pakistani national command function from the military for a few precious minutes, eliminating any threat of a Pakistani nuclear response. By the time that the C3I network had been re- established, Indian commandos had control of all the special weapons facilities.

Many Pakistani units immediately fled westward to Oman and Saudi, joining their government in exile.

In India, their sights also tracked westward. The obvious pressure point was financial. The oil lifeline ran directly through the Strait of Hormuz. Nor more obvious classic choke exists in all the world's oceans.

DESIGNERS' NOTES

This is the graduation exercise. Only a few liberties have been taken in this scenario with the order of battle for the participants. A few extra ex-Soviet aircraft have been added to India, along with the possibility of another submarine or two. In reality, the Saudi air force has purchased 72 F-15XP models (software crippled E models) and a number of British Tornados.

Interest on an Old Debt

by Mark R. Lam

SCENARIO INTRODUCTION

The arms market is a hot item with the breakup of the Soviet Union and the subsequent flooding of the market of weaponry from Russian factories. India will probably become one of the major participants in this new arms race.

The United Nations, disturbed by India's hiring of CIS maritime experts to rapidly complete the construction of the Cochin-class CV and by the accelerated military buildup program India has embarked upon, slaps an arms embargo on the Indian Ocean power player. The government of India is told to halt their arms buildup or face severe and possibly permanent penalties from the UN. India decides to respond in a violent fashion, showing that she is tired of being bullied around and wants to be recognized as one of the worlds' great new powers.

The Ark Royal CVHBG recently completed exercises in the Persian Gulf, and now is en route to Diego Garcia to get more supplies and conduct a brief ASW exercise with US forces who will meet them there. India quickly learns of this intention and decides to exploit it. Without going on a shakedown cruise or training a new airgroup, the Indians deploy the Cochin and her new Yak-141 airgroup in an effort to teach her former imperial ruler and the world a lesson. The Indian Ocean belongs to India.

The British sail blindly into this ambush, and the carnage begins...

DESIGNERS' NOTES

I wanted to design at least one scenario that demonstrated India as a power player in the IO. The sides are roughly matched, save for the subs that are on the RED side. However, the Ark Royal was built with ASW as it's primary mission, so we will explore how effective she is at it.

The long-range patrol aircraft are in the scenario simply because the computer needs some way of finding the British. This is perhaps one the shortcomings of the

computer, as it can't really take the initiative in search procedures.

The Main Event

by Mark R. Lam

SCENARIO INTRODUCTION

It took four weeks for NATO to finally gain the upper hand over the CIS forces involved with Operation Southern Swath. That time has exacted a terrible toll on both sides, but it gave both navies a chance to rethink their policies. Early on, the Enterprise CVBG had been pounding on the odd CIS surface group encountered in the Pacific Ocean. After two weeks, she returned to Pearl Harbor for replenishment, and then sailed for the IO. Restocked, rested, and ready, the Big E's job is to take the battle to the CIS forces now stationed in the Persian Gulf. Those forces include a large CVBG centered on the Admiral Kusnetsov, some subs, and a large contingent of the Russian Air Force.

The US Air Force has established a base of operations at Berabera, Somalia, and has moved one squadron each of F-16Cs and B-52Gs to Diego Garcia. These forces are to be used by the commander of the Big E in the execution of his mission.

The CIS commander has a simple mission that he has been trained for his entire military life: Sea Denial. Put in another way, his job is to make sure the Enterprise can't move into the Persian Gulf. He can wait for the Enterprise to engage the CIS forces; he doesn't have to take the offensive. While maybe not the strategy some US planners would like, it is typically Russian. His forces are ready.

The Big E and her escorts moved into the Western IO on Monday, 14 November. The fate of the free world would be decided by Thursday...

DESIGNERS' NOTES

This is a scenario that demonstrates how the world's two superpowers would have met had that occurrence ever taken place. The Soviet Navy was built around the idea of Sea Denial: don't let your enemy use this area. The US Navy was built around the idea of Power Projection: take that area away from the enemy. Two different philosophies that seek the same mission: control of the sea. How well would either of them work? Play the scenario and find out...

GLOSSARY OF TERMS

3D: Three-dimensional or "Height Finding" RADAR.

A (Alpha)

AA: Air-to-Air combat between aircraft.

AA-2: The Soviet ATOLL air to air missile (IRH).

AA-8: Soviet APHID air to air missile (IRH).

AA-9: Soviet AMOS air to air missile (SARH/TARH).

AA-10B: Second version of the Soviet ALAMO air to air missile (IRH).

AA-11: Soviet ARCHER air to air missile (IRH).

AAM: Air to Air Missile.

AAW: Anti-Air Warfare. The fine art of destroying aircraft in flight by any means. May be exercised by surface and aerial units.

AAW Ring: Anti-Air Warfare Ring. The second ring (from the center) in the Formation Editor, usually occupied by SAM shooters of either the Middle Range or Short Range variety.

ACM: Air Combat Maneuvering, formerly known as dogfighting.

AEW: Airborne Early Warning. The marriage of a long range search and tracking radar to an airframe, allowing increased area of coverage via increased altitude of the antenna and improved mobility.

AGM: U.S. Department of Defense prefix for the designation of guided air to ground ordance.

AGM-84A: Air launched version of the HARPOON anti-ship cruise missile (I/TARH).

AIM: U.S. Department of Defense prefix for the designation of guided Air to Air ordnance.

AIM-7M: The current version of the SPARROW air to air missile (SARH).

AIM-9M: The current version of the SIDEWINDER air to air missile (IRH).

AIM-54C: The current version of the PHOENIX air to air missile (I/M/TARH).

Altitude Bands: The altitude and depth conventions used in HARPOON; Very Deep (Only certain submarine classes), Deep (up to 29 KTS without cavitation), Intermediate (deeper than the thermocline, speeds up to 24 KTS without cavitation), Shallow (just above the thermocline), Periscope Depth (shallow enough to raise the periscope or other masts and antennae, may also be spotted by low flying aircraft.), Sea Level/Surfaced, Very Low (less than 30m/100ft), Low (30m to 600m), Medium (600m to 3,500m) High (3,500m to 20,000m), Very High (20,000m+).

AMOS: See AA-9.

ARCHER: See AA-11.

ARM: Anti Radiation Missile. A missile which homes on the emissions of a radar.

AS: See A/S.

AS/SS: Combination of Air Search and Surface Search functions in one RADAR. Used in Sensors Screen Display.

A/S: Air Search. Used in Sensors Screens Display as AS.

ASMD: Anti-Ship Missile Defense.

ASROC: Anti-Submarine ROCket.

ASuW: Anti-Surface Warfare. Detecting, classifying, tracking, and engaging surface contacts from any platform type or combination.

ASW: Anti-Submarine Warfare, also known (colloquially) as Awfully Slow Warfare. Detecting, classifying, tracking, and engaging submarine contacts from any type or combination of platforms..

ATOLL: See AA-2.

B (Bravo).

BACKFIRE: See TU-22M.

BADGER: See TU-16.

Baffles: The sixty (60) degree arc centered on the stern of a ship or submarine (180R) where the platform is essentially sonar blind due to machinery noises and the effects of the wake. Does not apply to Towed Array Sonars.

Base: Generic term used in HARPOON to denote an airfield, port, city, or combination thereof.

BB: Abbreviation for Battleship.

BCGN: Abbreviation for a Battlecruiser armed with guided missiles and using Nuclear propulsion. See FRUNZE, KIROV, and KALININ.

BEAR: See TU-95.

Bearing: A direction from one object to another, measured in Degrees. Bearings are either Relative (000R), which is based on the head of the unit, or True (000T), based on the earth's rotational axis and the geographic locations of the two objects.

Bingo: Remaining fuel requires return to base (RTB).

C (Charlie).

CAP: Combat Air Patrol. Aircraft stationed in a formation for the express purpose of intercepting threat aircraft before they can engage the mission essential unit.

Cavitation: The formation and subsequent collapse of vapor bubbles in the low pressure area behind an object moving through the water at high speed. The "Screw(s)" or "Propeller(s)" of most vessels experience this phenonenom, though the effect can be mitigated or eliminated by increasing the ambient pressure around the screws (by placing the screw deeper in the water by design or by going deeper in a submarine.).

CG: Guided Missile Cruiser. A major combatant armed with a guided missile main battery.

CGN: Nuclear powered Guided Missile Cruiser.

Choke Point: A narrow passage between land masses which effectively restricts the passage of vessels, and which, in wartime, can be actively controlled to prevent the passage of belligerent vessels.

Class: A group or family of vessels which are essentially identical.

CV: Designation for an Aircraft Carrier.

CVBG: Carrier Battle Group.

CVH: Helicopter Carrier

CVHG: Guided Missile Helicopter Carrier

CVN: Designation for a Nuclear Powered Aircraft Carrier.

CZ: Convergence Zone. Convergence Zones occur in deep water when the effects of pressure overcome other effects on the speed of sound in water and curve sound waves back towards the surface. The first CZ is centered at 32NM from the 'Listening' platform and is 4NM wide. The second CZ is centered at 64NM and is 8NM wide. Detections in the third, fourth, and fifth CZ's have been recorded.

D (Delta).

D: Dipping Sonar. Used in Sensors Screen Display.

DD: Designation for a Destroyer.

DDG: Designation for a Guided Missile Destroyer.

E (Echo).

ELINT: Electronic Intelligence. The interception and analysis of electromagnetic emissions to determine unique emitter and hull-specific correlation.

Endurance: HARPOON specific airborne mission radius based on current altitude and speed.

ESM: Electronic Support Measures. The methods and equipment used to intercept RADAR emissions and classify them as to type and purpose (specific radar on advanced systems). ESM also yields a bearing to the emitter which can be triangulated or processed using TMA to yield a weapons solution.

EW: Electronic Warfare.

F (Foxtrot).

FF: Designator for a Frigate.

FFG: Designator for a Guided Missile Frigate.

FFH: Designator for a frigate optimized for Helicopter operations.

FFL: Designator for a light frigate.

G (Golf).

Group: Used in HARPOON to denote two or more platforms operating together. HARPOON is based on controlling the actions of "Groups" vice individual plat-

forms.

H (Hotel).

H: Hull Mounted. Defines a SONAR as being mounted on the Hull of the platform in question. Used in Sensors Screen Display.

HARPOON: Surface to Suface missile, used primarily by the US.

HF: Used by HARPOON to denote a Height Finding Radar, Used in Sensors Screen Display. Also may denote "High Frequency" in the electromagnetic spectrum.

H/T: Combination Hull Mounted and Towed array SONAR system as used in the HARPOON Sensors Screen Display.

I (India).

IR: InfraRed. All objects at a higher temperature than ambient emit infrared radiation, an electromagnetic phenomenon just outside the frequency of visible light. Many detection and guidance systems take advantage of this phenomenon, and are referred to as IR systems.

J (Juliet).

K (Kilo).

Knot: Nautical Miles per Hour, the standard measure of speed for ships and aircraft.

kt: Abbreviation for Knot

L (Lima).

LD/SD: A RADAR with the ability to "Look Down" and detect a target against ground clutter or sea return, and "Shoot Down" same. Used in Sensors Screen Display.

Look Down/Shoot Down: See LD/SD.

M (Mike).

M: A "Mine" hunting sonar. Used in Sensors Screen Display.

MFC: Missile Fire Control RADAR.

Main Body: The innermost ring of the Formation Editor, where the Mission Essential Unit(s) reside as well as other platforms which require defense.

N (November).

NM: Nautical Miles. 1 Nautical Mile is 2025 yards (6076 feet) vice 1760 yards (5280 feet) in a Statute Mile. Note also that 1NM is exactly 1 Minute or arc along a great circle (such as the equator).

O (Oscar).

OPFOR: Opposing Forces.

OTH: Over The Horizon. Referring to a radar (usually land based) that uses reflection or other methods to see objects beyond the line of sight horizon. Used in Sensors Screen Display.

OTHT: Over The Horizon Targeting. Using passive means such as ESM, ELINT, SIGINT, and SONAR to detect, track, and target vessels which are not within line of sight.

P (Papa).

PGM: Precision Guided Munitions

Ph: Prob-Hit—Weapon hit probability.

PIM: Path of Intended Motion

Picket: A platform stationed well away from the Main Body for the express purpose of locating the enemy and providing advanced warning to the formation of the enemy's location.

Picket Ring: The outermost ring in the Formation Editor.

Platform: Any vehicle capable of carrying a weapon or sensor.

Q (Quebec).

R (Romeo).

RADAR: Radio Detection and Ranging. A detection system that operates on the

principle of reflected radio frequency energy.

RIM: U. S. Department of Defense abbreviation used to prefix the designation of a shipboard SAM.

RIM-7B:

S (Sierra).

S: Sonobuoy(s). A hydrophone or active sonar in an expendable buoy that transmits received signals (echoes) to an aircraft or ship via radio. Used in Sensors Screen Display.

SAG: Surface Action Group. A surface group centered around a major combatant but too small or mission limited to be considered a Battle Group. A SAG may be assigned to ASW, ASuW, Amphibious, or Strike missions.

SAM: Surface to Air Missile.

Side: HARPOON is a bi-polar game, in which the player commands the forces of one side (Blue or Red) and the computer acts as the opponent.

SONAR: Sound Navigation and Ranging. Active Sonar is the combination of a transmitter and a hydrophone which emits a sound wave and listens for the return echo. Active SONAR yields fire-control quality position data (bearing and range), but may be counter detected at two to three times the effective range of a target return. Passive Sonar is "listen only," and is thus dependent on the noise level of the target. Passive ranges may be better or worse than Active ranges depending on the Sonar and the acoustic conditions, but passive Sonar does not give the platform's location away. Passive Sonar data is limited to bearing data and information on the type and nationality of the detected platform (depending upon the sensitivity and processing capability of the detecting platform). Fire control data must be extrapolated using TMA or triangulation.

SPIR: Shipboard Passive infrared detection and tracking system, Used in Sensors Screen Display.

SS: Conventional Submarine. Also Surface Search (S/S) in the Sensors Screen Display. Also the NATO pre-fix for a Soviet Surface to Surface missile.

SSN: Nuclear Powered Attack Submarine.

SuCAP: An Air-to-Surface armed air group patrolling the ASuW threat axis.

T (Tango).

T: Towed Array Sonar, Used in Sensors Screen Display.

TARCAP: Target Combat Air Patrol

Thermal Layer: Improper referrence to the Thermocline. See "Thermocline."

Thermocline: A sudden and marked change in the temperature vs depth gradation that causes a semi-permeable barrier to effective sound transmission. It is very hard to hear sounds across a thermocline, thus making it an effective hiding place for submarines.

Towed Array Sonar: A linear hydrophone array that is towed behind a ship or submarine. A towed array sonar has a much greater apreture than a hull mounted sonar and is thus more capable of detecting very low frequency sounds. A towed array is also immune to the effects of the Baffles, and may be streamed above or below the thermocline by varying ship's speed and length of tow.

U (Uniform).

Unit: A unit in HARPOON consists of any single Ship, Submarine, or Base. There may be multiple aircraft in a single group if they all share the same mission and loadout. Similarly, a Unit of weapons (torpedos and missiles) may include more than one weapon in the same location and targeted at the same platform.

Unit Map: The smaller of the two rectangular map areas on the HARPOON display.

V (Victor).

VDS: Variable Depth Sonar. A non-linear array hydrophone in a hydrodynamic shape towed behind a vessel to allow placement of a sonar system beneath the thermocline. Less effective than a towed array, and being replaced by same in most first rate navies. Used in Sensors Screen Display.

W (Whiskey).

X (X-Ray).

Y (Yankee).

Z (Zulu).

Main Menu

Harpoon Design Series III

Player's Notes

These 48 scenarios were developed using the same databases that HDS I and HDS II used. We therefore suggest you use the excellent materials provided with those BattleSets on the proceeding pages to investigate platforms, tactics, and the "bigger picture" of naval warfare in the 80's and 90's.

During development we decided to play a little "what if" and took the liberty of using the American E-2C AEW a/c to simulate the Soviet Yak-44, an a/c that was in development at the time (1990). Today, we know that Yak was never put into production.

Finally, in the original three BattleSets, GIUK, NACV, and MEDC, there are tanker loadouts available. These can be used as described in the Player's Guide, for the air to air refueling of your aircraft.

Don R. Gilman

Designer's Notes

A Cold Retrospective

Any conflict between the United States and the former Soviet Union would have surely generated the widest ranging, largest scale naval engagements in the history of warfare.40 years of unrestrained arms build up prior to the commencement of hostilities has positioned both sides to fully exploit the strategic doctrine defined by their arms procurement strategy. Our goal when HDS III was conceived was to provide you with a series of snap shots from a naval war that(thank goodness) the men and women of our armed forces will never have to fight.
As you will see when playing the scenarios of HDS III the potential for destruction and loss of human life is extreme.

B.I. Hutchison

Scenario Index

The columns beside each scenario are a difficulty rating for each area of operations.

The first column is the Air Operations factor, the second is the Surface Operations factor, and the third is the ASW operations factor.
A zero (0) indicates no activity, while a five (5) indicates a massive level of operations.

Scenario	Title	AAW	ASuW	ASW
GIUK-01	Surprise in the Snow	3	3	2
GIUK-02	The High Ground	3	3	3
GIUK-03	A Thirsty Dragon	2	2	2
GIUK-04	The Devils Due	4	3	4
GIUK-05	What's Mine is Mine	2	1	4
GIUK-06	Hidden Soldiers	1	1	4
GIUK-07	The Big Red One	3	2	3
GIUK-08	Iceland's Thaw	5	3	3
GIUK-09	A Slippery Slope	4	3	4
GIUK-10	Misdirection	4	2	1
GIUK-11	Run from the Beach	4	2	4
GIUK-12	Exodus	3	2	3
NACV-01	Be Quick	0	2	2
NACV-02	Across the Pond	0	2	2
NACV-03	Danger Unseen	0	0	3
NACV-04	Miss Kitty	2	3	3
NACV-05	19 Minus 18 Equals-?	3	2	3
NACV-06	Kitty Comes Calling	4	2	2
NACV-07	Bee Hive	5	5	2
NACV-08	Hide and Seek	4	4	3
NACV-09	Pieces of the Puzzle	0	1	3
NACV-10	Return of the 18th	5	4	4
NACV-11	Air Force 1	1	1	3
NACV-12	The Last Day	2	4	4
MEDC-01	Cold Turkey	4	3	2
MEDC-02	Lonely Places	4	4	3
MEDC-03	Sara's Day	4	4	2
MEDC-04	The Hazing	4	4	2
MEDC-05	Many Dead in the Med.	3	3	2
MEDC-06	Air Head Red	2	3	2
MEDC-07	Sacrifices	2	1	1
MEDC-08	Keyhole	2	1	2
MEDC-09	Tyrrhenian Devil	4	1	2
MEDC-10	The First Step	3	1	4
MEDC-11	From Walking to Running	2	1	1
MEDC-12	Trading Hot Punches	2	1	2
IOPG-01	Opening Day	1	1	1
IOPG-02	Fog of War	2	2	1
IOPG-03	Surrogates	3	2	2
IOPG-04	Island Home	3	2	2
IOPG-05	The Lone Ranger	4	2	3
IOPG-06	Two is a Crowd	3	2	3
IOPG-07	A Pain in the Side	4	2	3
IOPG-08	Three Days at Mannar	3	2	1